Proceedings of
the United States
National Museum

SMITHSONIAN INSTITUTION • WASHINGTON, D.C.

Volume 120 1967 Number 3561

APR 1 1967
LIBRARY

QL
1
.S6
no.3561

REVIEW OF SOME SPECIES OF LOXOSTEGE HÜBNER AND DESCRIPTIONS OF NEW SPECIES (LEPIDOPTERA, PYRAUSTIDAE: PYRAUSTINAE)

By HAHN W. CAPPS

SMITHSONIAN PRESS

DEPOSITED BY THE

DEPOSITED BY THE
UNITED STATES OF AMERICA

Proceedings of
the United States
National Museum

SMITHSONIAN INSTITUTION • WASHINGTON, D.C.

Volume 120 1967 Number 3561

REVIEW OF SOME SPECIES OF LOXOSTEGE HÜBNER AND DESCRIPTIONS OF NEW SPECIES (LEPIDOPTERA, PYRAUSTIDAE: PYRAUSTINAE)

By HAHN W. CAPPS[1]

The purpose of this paper is to provide means for reliable identification of the species of *Loxostege* Hübner, to correct invalid synonymy and nomenclature, and to provide names for undescribed species.

Some nomenclature, following Hampson's (1899, p. 207) error in treating *Loxostege* as a nomen nudum and synonym of *Phlyctaenodes* Guenée (1864, p. 173), needs correction. Although Hampson (1918, p. 189) corrected the error, the generic placement has not been corrected for those new species described in the interim from Mexico, Central and South America because there has been no subsequent revision involving them and because lists of American Lepidoptera published in that period have been restricted to North American species.

In addition to the nomenclatural aspect, zoology is also involved. The type-species of *Loxostege* and *Phlyctaenodes* are not congeneric. *Pyralis aeruginalis* Hübner, the type of *Loxostege* (Hampson, 1918, p. 189), differs from *Pyralis pustulalis* Hübner, the type of *Phlyctaenodes* (Hampson, 1899, p. 211), in maculation and genitalia as indicated below.

[1] Retired, September 1964, Entomology Research Division, Agriculture Research Service, U.S. Department of Agriculture, Washington, D.C.

VENATION.—*Loxostege aeruginalis:* Forewing (fig. 2) with vein 6 distinctly closer to vein 7 than to middle of cell; veins 8 and 9 long stalked, 10 approximate to 8+9 at cell and parallel for almost half the length of stem; vein 11 subparallel with 10 to costa; terminus of vein 1a upturned, obsolescent distally or if discernible, forming a loop with 1b. Hindwing (fig. 2a) essentially the same as in *P. pustulalis*.

Phlyctaenodes pustulalis: Forewing (fig. 3) with origin of vein 6 closer to middle of cell than to vein 7; stalking of veins 8 and 9 much shorter than in *L. aeruginalis;* vein 10 strongly divergent from stalk of 8 and 9 a short distance from cell; vein 1a acutely divergent from vein 1b from base and terminating on inner margin of wing. Hindwing (fig. 3a).

MALE GENITALIA (see figs. 14 and 18 for terminology).—*L. aeruginalis:* Harpe with a well-developed, hooklike clasper; transtilla with ventrodistal extension conspicuous, narrow and extending to near base of anellus. Uncus with apex rounded distally. Gnathos absent.

Phlyctaenodes pustulalis (fig. 5): Harpe unarmed; transtilla without ventrodistal extension. Uncus somewhat bilobed at apex. Gnathos well developed.

This study is based, in part, upon more than 1800 dissections of genitalia prepared during the investigation.

FEMALE GENITALIA (see fig. 7 for terminology).—*L. aeruginalis* (fig. 7): Bursa copulatrix with an accessory pouchlike appendage; signum well developed.

P. pustulalis (fig. 4): Bursa copulatrix simple, without an accessory pouchlike appendage; signum absent.

The *Loxostege* species *helvialis* (Walker), *mancalis* (Lederer), *similalis* (Guenée), *rantalis* (Guenée), *occidentalis* (Packard), and a species described as *Botys obliteralis* Walker and heretofore assigned to *Loxostege* and *Phlyctaenodes*, are so similar to each other or closely related species in color, maculation, and other characters that examination of the genitalia is often necessary for reliable identification.

The delineations were prepared by Mr. A. D. Cushman, scientific illustrator, Entomology Research Division, Agric. Res. Serv., U.S. Department of Agriculture, and are not drawn to scale. The genitalia are in ventral view and those of the males are drawn with one harpe omitted and the aedeagus removed.

All photos of adults, except one, are by J. Scott, staff photographer, U.S. National Museum; figure 146 is used through courtesy of British Museum (Nat. Hist.). Photos are about three times natural size.

Loxostege Hübner

Loxostege Hübner, 1827, Verzeichniss bekannter Schmettlinge [sic], p. 352. [Type: *Pyralis aeruginalis* Hübner, designation Hampson, 1918, Ann. Mag. Nat. Hist., ser. 9, vol. 2, p. 189.]

Characters common to the *Loxostege* species treated here are discussed below.

ADULT.—Antenna simple. Frons usually pointed or conically produced, the modification sometimes limited to the lower margin and more discernible from dorsal view. Midtibia normal and without a hair-pencil, or incrassate and with a hair-pencil, often concealed in a groove. Hind tibia with two pairs of spurs (the relative lengths referred to herein are those of the upper pair of spurs on the hind tibia of the male).

LARVA.—Chaetotaxy and crochets are typical pyraustid. Prothorax with two setae on the prespiracular shield; group VI bisetose. Meso- and metathorax with VI unisetose. Abdominal setments 3–6 with seta IV approximate to seta V, and under spiracle on same pinaculum. Ninth abdominal segment with seta I approximate to seta III and on same pinaculum; setae IV and V absent, only seta VI of this group present. Crochets on abdominal prolegs of triordinal length and arranged in a penellipse. Anal fork absent.

Distribution, food plant, and flight data reported in this paper are taken entirely from labels accompanying the specimens examined.

Loxostege helvialis (Walker)

FIGURES 8, 62, 105

Spilodes helvialis Walker, 1859, List of the lepidopterous insects in the British Museum (Nat. Hist.), pt. 18, p. 772.

Botys thycealis Walker, 1859, ibid., pt. 19, p. 981.

Botys apertalis Walker, 1865, ibid., pt. 34, suppl. 4, p. 1393.

Botys citrina Grote, 1867, Trans. American Ent. Soc., vol. 1, p. 23.

Loxostege helvialis (Walker) authors.—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 382.—Barnes and McDunnough, 1917, Check list of the Lepidoptera of boreal America, p. 131.—Forbes, 1920, Cornell Univ. Agric. Exp. Sta. Mem. 68, p. 556 [as *helvalis*.]—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 12.

MALE.—Alar expanse 18–20 mm. Frons with conical production strong. Antenna somewhat pubescent, cilia dense, very short, length of cilia less than one-half width of shaft. Midtibia slightly incrassate, hair-pencil obsolescent. Outer spur less than one-half as long as inner spur. Labial palpus length less than two times width of eye; first segment white; second segment slightly upturned, luteous

dorsally and laterally, white ventrally; third segment short, porrect or slightly downturned, luteous dorsally and laterally, white below. Head, thorax, and abdomen pale ochreous above, whitish below. Forewing: Upper surface pale yellow, somewhat shiny; area along costa, the reniform, discal dot, and two transverse lines luteous; subterminal line absent. Transverse lines smooth, transverse anterior line bent outwardly, concave or weakly angulate. Posterior transverse line directly posterior from costa to about vein 7, slightly concave outwardly to vein 3, angled inward to vein 2, outward to fold between veins 1b and 2, thence slightly inward to inner margin of wing. Hindwing: Upper surface ground color similar to that of forewing but paler from cell to costa; postmedial line appearing as a continuation of transverse line of forewing and terminating at about vein 2; subterminal line absent.

Fringe of fore- and hindwings concolorous with ground color of wings. Under surface of wings paler than upper, with markings evident but weaker.

Genitalia (fig. 8): Uncus with apex bluntly pointed. Harpe with simple hairlike scales; the sclerotized hooklike structure short, stout, bifid. Vinculum rather broadly concave midventrally. Aedeagus with an irregular, elongate patch of numerous spinelike cornuti and distally, a strong, single spine and a tapered, subcylindrical structure, the latter with circular grooves; basal keel absent or obsolescent.

Female (fig. 105).—Alar expanse 16–20 mm. Color and maculation like that of male. Genitalia (fig. 62) with sclerotization of ventral margin of ostium weak or absent; ductus bursae broad between ostium and origin of ductus seminalis; accessory pouch small.

Larva.—Mature, 22 mm long. Head sordid white, with reticulate amber markings; fuscous pigmentation of lateral incision of hind margin inconspicuous or absent. Prothoracic shield sordid white, middorsal markings weak, pale amber; area adjacent to lateral margin darker and extending almost to base of seta Ib. Pinacula bearing setae Ia–Ib and IIa–IIb of mesothorax separate, but slightly elevated. Pinacula bearing setae IIa–IIb of the meso- and metathorax and abdominal segments 1–8 with the sclerotization stronger and the brownish or fuscous pigmentation more extensive than those pinacula above or below. Ninth abdominal segment with pigmented area of pinaculum of seta II small and adjacent to base of the seta; pigmentation of pinaculum bearing setae I and III extensive, covering almost the entire area; pinaculum of seta VI nonpigmented.

Types.—British Museum (Nat. Hist.): *helvialis*, female; *thyceali*, male; *apertalis*, male and female. American Museum of Natural History: *citrina*, female, hereby designated lectotype.

TYPE-LOCALITIES.—United States: *helvialis* and *thycealis*. North America: *apertalis*. "Phil." [Philadelphia, Pa.]; *citrina*.

FOOD PLANTS.—*Amaranthus*, beets.

DISTRIBUTION.—UNITED STATES: Massachusetts: Barnstable, Martha's Vineyard. New York: Long Island (Bellfort, Orient). New Jersey: Lakehurst, Oakland. District of Columbia. Florida: Miami, Sarasota, Siesta Key, Tavernier, Craig. Texas: Brownsville, Black Jack Springs, Mercedes, San Antonio, San Benito, Big Bend Nat. Park, and Montague Co. Oklahoma: Norman. CANADA: Ontario: Chatham.

SPECIMENS EXAMINED.—72.

IN FLIGHT.—March to October.

REMARKS.—Several species have heretofore been confused with *helvialis* in collections. Six of these species are described as new herein, and some are reliably distinguished from *helvialis* only by examination of the genitalia.

I am indebted to W. H. Tams and E. L. Martin of the British Museum (Nat. Hist.) for comparison of material with the Walker types; and to F. H. Rindge of the American Museum of Natural History for information relative to the cotype of *citrina*. The male cotype of *citrina* could not be located in the material at the Philadelphia Academy of Sciences and appears to be lost; therefore, the female cotype at the American Museum of Natural History is designated lectotype of the species.

Loxostege pseudohelvialis, new species

FIGURES 9, 63, 106

MALE (fig. 106).—Alar expanse 17–20 mm. Frons and antenna as in *helvialis*, but male differs otherwise as follows: Midtibia more incrassate, hair-pencil well developed. Outer spur of hind tibia shorter, about one-third as long as inner. Outer margin of fore- and hindwing darker, concolorous with markings of wings (in *helvialis*, concolorous with ground color of wings).

Genitalia (fig. 9): Similar to those of *helvialis* but with apex of uncus more sharply pointed; arms of bifid hook slenderer and more angulate distally; vinculum narrower and more attenuate midventrally. Aedeagus similar to that of *helvialis* but more slender.

FEMALE.—Alar expanse 17–21 mm. Similar to male in color and maculation. Outer spur one-half as long as inner spur. Genitalia (fig. 63) similar to those of *helvialis* but with ventral margin of ostium a narrow, somewhat crinkled sclerotized band; sclerotized portion of ductus bursae between ostium and origin of ductus seminalis shorter, narrower, lateral margins subparallel.

TYPE.—Male, U.S. National Museum, USNM 67595, genitalia slide OBP 290.

TYPE-LOCALITY.—Baboquivari Mts., Pima Co., Ariz.

PARATYPES.—UNITED STATES: Arizona: type-locality, 8 ♂, 4 ♀; Brown Canyon, Baboquivari Mts., 7 ♀; Madera Canyon, Santa Rita Mts., 33 ♂, 28 ♀; Madera Canyon, Pima Co., 1 ♀; Paradise, Cochise Co., 1 ♂; Tempe, 1 ♂, 1 ♀; Tucson, 1 ♂, 1 ♀; Scottsdale, Maricopa Co., 1 ♂; Southwestern Res. Sta., Chiricahua Mts., 2 ♂, 1 ♀; Chiricahua Mts., 2 ♂, 1 ♀; White Mts., 1 ♀; Huachuca Mts., 2 ♀; Yavapai Co., 1 ♀; "Arizona" [no additional locality], 2 ♂, 3 ♀. California: San Diego, 7 ♂, 4 ♀; La Puerta Valley, 2 ♂, 3 ♀. Utah: Beaver, 1 ♂. New Mexico: Mesilla, 1 ♀. Texas: Limpia Canyon, Jeff Davis Co., 1 ♀. MEXICO: Sonora: Nainari, 1 ♂, 5 ♀. Paratypes in the U.S. National Museum, Los Angeles County Museum, American Museum of Natural History, the collection of C. P. Kimball, the Canadian National Collection, and the British Museum (Nat. Hist.).

FOOD PLANT.—Unknown.

IN FLIGHT.—June to September.

REMARKS.—The *L. pseudohelvialis* series contains specimens with labels of both *helvialis* and *citrina*. If specimens are in good condition, the luteous suffusion along the outer margin of the fore- and hindwing distinguishes specimens of *pseudohelvialis* from those of *helvialis*. The more incrassate midtibia and hair-pencil of *pseudohelvialis* also distinguish its males from those of *helvialis*, but examination of the genitalia is necessary for reliable identification of worn females.

***Loxostege arizonensis*, new species**

FIGURES 11, 64, 112

MALE (fig. 112).—Alar expanse 20–24 mm. Frons conical. Antenna ciliate, length of cilia about one-half width of shaft. Midtibia distinctly incrassate, hair-pencil well developed. Outer spur slightly less than one-third as long as inner spur. Similar to *pseudohelvialis* in color and maculation, but the average size of *arizonensis* is larger and luteous suffusion along outer margin of fore- and hindwing is more extensive.

Genitalia (fig. 11): Uncus pointed. Harpe with hairlike scales simple; padlike production above base of hook narrow, nonscobinate, but with a few simple setae, hooklike structure strong, curved; sacculus normally with a single spine about midway between cluster of spines and base of anellus. Vinculum narrowly attenuate midventrally. Aedeagus with a conspicuous, thin, rounded basal keel and a dense cluster of spinelike cornuti distally.

FEMALE.—Alar expanse 19–24 mm. Similar to male in color and maculation. Genitalia (fig. 64) with midventral invagination of

ostium divided and rather broad; ductus bursae narrow at origin of ductus seminalis.

TYPE.—Male, U.S. National Museum, USNM 67596, genitalia slide HWC 7725.

TYPE-LOCALITY.—Oracle, Ariz.

PARATYPES.—UNITED STATES: Arizona: Baboquivari Mts., Pima Co., 9 ♂, 4 ♀; Sabino Canyon, Santa Catalina Mts., Pima Co., 6 ♂, 8 ♀; Madera Canyon, Santa Rita Mts., 42 ♂, 55 ♀; Santa Rita Mts., 1 ♂; Nogales, 4 ♂, 2 ♀; Palmerlee, 1 ♂; Patagonia, 1 ♂; Southwestern Res. Sta., Chiricahua Mts., Cochise Co., 1 ♂; "SWS" [Southwestern Res. Sta.], 1 ♀. MEXICO: Chiapas, 1 ♂. Oaxaca, 1 ♀. Mesquititlan, 1 ♀. Guerrero: Iguala, 1 ♀. Puebla: Tehuacan, 2 ♀. Sonora: Nainari, 1 ♂, 4 ♀. Paratypes in U.S. National Museum, American Museum of Natural History, Los Angeles County Museum, and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—July to September in Arizona; May to June in Mexico.

REMARKS.—Labels on some specimens indicate that *arizonensis* has also been confused with *helvialis*.

Loxostege neohelvialis, new species

FIGURES 12, 66, 111

MALE (fig. 111).—Alar expanse 18–23 mm. With characters of *arizonensis* and reliably distinguished from it only by examination of genitalia. Genitalia (fig. 12) resemble those of both *arizonensis* and *helvialis;* but the aedeagus of *neohelvialis* has, in addition to dense distal patch of slender spines, a small cluster of strong spinelike cornuti from a narrow, straplike sclerotization which distinguishes the species from all others of the group.

FEMALE.—Alar expanse, 20–23 mm. Similar to male in color and maculation. Genitalia (fig. 66): configuration of ductus bursae from ostium to origin of ductus seminalis as illustrated; sclerotization of ventral margin of ostium interrupted medially; ductus bursae distinctly sclerotized and longitudinally rugose at origin of ductus seminalis.

TYPE.—Male, U.S. National Museum, USNM 67597, genitalia slide HWC 7729.

TYPE-LOCALITY.—Plano, Tex.

PARATYPES.—UNITED STATES: Georgia: Milledgeville, 1 ♀; Tifton, 1 ♂. Florida: Quincy, 2 ♂, 5 ♀; Cassadaga, 1 ♀. Louisiana: 1 ♂, 1 ♀. Mississippi: Bolton, 3 ♀; Starkville, 1 ♀; Vicksburg, 1 ♂. Missouri: Charleston, 4 ♂, 2 ♀. Texas: Brownsville, 1 ♂, 1 ♀; Dallas, 1 ♀; Plano, 1 ♀. Arizona: Box Canyon, Santa Rita Mts., 2 ♂; Madera Canyon, Pima Co., 3 ♀; Madera Canyon, Santa Rita Mts.,

2 ♂, 1 ♀; Santa Rita Mts., 2 ♀; Baboquivari Mts., Pima Co., 1 ♂; Redington, 2 ♂, 1 ♀. CUBA: Santiago, 15 ♂, 10 ♀. JAMAICA: 1 ♀. MEXICO: Vera Cruz: La Gloria Cardel, 1 ♀; Coatepec, 1 ♀. Yucatan: Chichen Itza, 1 ♂. Jalisco: Guadalajara, 1 ♀. Sonora: Nainari, 3 ♂, 8 ♀. GUATEMALA: Cayuga, 1 ♂. COSTA RICA: Avangarez, 1 ♀. PANAMA: Corozal, 3 ♂. Paratypes in the U.S. National Museum, Los Angeles County Museum, C. P. Kimball collection, and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—June to September.

REMARKS.—Labels on some specimens indicate that *neohelvialis* has been confused with both *mancalis* and *helvialis*. The lack of a subterminal line on the fore- and hindwings of *neohelvialis* distinguishes it from *mancalis*. The sparser cilia of the antenna and incrassate midtibia with a hair-pencil distinguishes the males of *neohelvialis* from those of *helvialis*. If the specimens are in good condition, the coloration along the outer margin of the fore- and hindwings is darker in *neohelvialis* than in *helvialis;* in the former, it is concolorous with the markings of the wings and in the latter, concolorous with the ground color of the wings. Worn females of *neohelvialis*, however, are reliably distinguished from those of *helvialis* only by examination of the genitalia.

***Loxostege nayaritensis*, new species**

FIGURES 10, 65, 117

MALE.—Alar expanse 25 mm. Frons conical. Antenna weakly ciliate, cilia one-half or less than one-half as long as width of shaft. Midtibia incrassate, hair-pencil present. Outer spur about one-third as long as inner one. Resembles both *pseudohelvialis* and *arizonensis* in color and maculation; in *nayaritensis*, markings darker and browner with indentation of transverse posterior line of forewing more directly inward at vein 3 and coloration of reniform extending somewhat beyond lower angle of cell between veins 3 and 4; hindwing with a similar but smaller patch.

Genitalia (fig. 10): Like those of *arizonensis* but with padlike production broader, more rounded, and setae more numerous; sacculus without a spine midway between outer cluster of spines and base of anellus; vinculum more broadly concave midventrally.

FEMALE (fig. 117).—Alar expanse 22 mm. Similar to male in color and maculation except that transverse posterior line of forewing is somewhat straighter from costa to vein 3 and small brownish patch between veins 3 and 4 at lower angle of cell stronger; these differences are not likely to be constant in a larger series. Genitalia (fig. 65) with midventral modification of ostium narrow, not interrupted; ductus bursae conspicuously enlarged at origin of ductus seminalis.

TYPE.—Male, American Museum of Natural History, genitalia slide HWC 10,644.

TYPE-LOCALITY.—Compostela, Nayarit, Mexico.

PARATYPE.—Type-locality, 1 ♀. In collection of Cornell University.

FOOD PLANT.—Unknown.

IN FLIGHT.—August.

REMARKS.—The rather obscure brownish patch at the lower angle of the cell between veins 3 and 4 of the fore- and hindwings distinguishes *nayaritensis* from all other species of the genus that lack a subterminal line.

Loxostege polingi, new species

FIGURES 14, 67, 109

MALE (fig. 109).—Alar expanse 18–23 mm. Frons conical. Antenna with cilia short, somewhat pubescent. Midtibia moderately incrassate, hair-pencil present. Outer spur less than one-half as long as inner. Maculation similar to that of *arizonensis* but with shading along outer margin of fore- and hindwings usually not as sharply defined as in *arizonensis*.

Genitalia (fig. 14): Harpe without digitate setae; pad small, nonscobinate but with a few simple setae; clasper broadly rounded and fimbriate distally. Aedeagus with a distal patch of slender cornuti of irregular length; basal keel very small.

FEMALE.—Alar expanse 19–23 mm. Similar to male in color and maculation. Genitalia (fig. 67): configuration of ductus bursae from ostium to origin of ductus seminalis as illustrated; ductus bursae not sclerotized and without longitudinal grooves at origin of ductus seminalis; ductus seminalis somewhat scobinate adjacent to origin.

TYPE.—Male, U.S. National Museum, USNM 67598, genitalia slide HWC 7828.

TYPE-LOCALITY.—Lakeland, Fla.

PARATYPES.—UNITED STATES: Florida: Cassadaga 1 ♀; Gainesville, 2 ♂, 2 ♀; Lakeland, 3 ♀; Lake Placid, 1 ♀; Lake Placid [Archbold Biol. Sta.], 1 ♂, 2 ♀; Warrington, 1 ♀; Winter Park, 6 ♀. Texas: Black Jack Springs, 1 ♀; Kerrville, 1 ♂; San Diego, 1 ♂; San Antonio, 3 ♀; "Texas" [no additional locality], 1 ♀. Arizona: Madera Canyon, Santa Rita Mts., 1 ♀. MEXICO: Guerrero: Iguala, 2 ♀; Puebla: Tehuacan, 2 ♀; Zapotitlan, 1 ♀; Oaxaca: Oaxaca, 1 ♀; Totolapam, 1 ♀. Paratypes in the U.S. National Museum, American Museum of Natural History, Los Angeles County Museum, the collection of C. P. Kimball, and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—April to September in the United States; June to October in Mexico.

REMARKS.—The type of *polingi* bears a label indicating that it had been compared with the cotype of *citrina* and regarded as conspecific with it, prior to dissection of the genitalia. Other labels also indicate confusion with *helvialis* and with a more remotely related species, *Pionea eupalusalis* Walker. The rather broad, fimbriate clasper distinguishes the male genitalia of *polingi* from those of *helvialis* and *eupalusalis;* the configuration of the sclerotization of the ductus bursae between the ostium and collarlike structure at origin of the ductus seminalis is diagnostic for the females of *polingi*.

***Lozostege pelotasalis*, new species**

FIGURES 15, 113

MALE (fig. 113).—Alar expanse 18 mm. Frons conical. Antenna somewhat pubescent, cilia very short. Midtibia slightly incrassate, hair-pencil weak. Outer spur one-half as long as inner. Similar to *polingi* in maculation. Genitalia (fig. 15) similar to those of *polingi* but with uncus broader, stouter; fimbriate clasper of harpe narrower; aedeagus with a narrow, curved, hooklike cornutus in addition to distal patch of slender spinules.

FEMALE.—Unknown.

TYPE.—Male, Cornell University, genitalia slide HWC 10,642.

TYPE-LOCALITY.—Pelotas, Rio Gran do Sul, Brazil.

FOOD PLANT.—Unknown.

IN FLIGHT.—May.

REMARKS.—Efforts to obtain females of *pelotasalis* were unsuccessful. No other closely related species was noted in the South American material examined; there should be no difficulty in association of the sexes when the females become available.

***Lozostege boliviensis*, new species**

FIGURES 16, 110

MALE (fig. 110).—Alar expanse 19 mm. Frons conical. Antenna pubescent. Similar to *pelotasalis* in color but with markings much weaker, barely discernible. Genitalia (fig. 16) resemble those of *pelotasalis* but with uncus more pointed, the fimbriate clasper of the harpe distinctly narrower and more extenuate basally, and with a conspicuous, strong, hooklike production from near middle of dorsal margin of sacculus.

FEMALE.—Unknown.

TYPE.—Male, Canadian National Collection, genitalia slide CNC 3765 MS.

TYPE-LOCALITY.—Puerto Suarez, Bolivia.

FOOD PLANT.—Unknown.

IN FLIGHT.—December.

REMARKS.—Although no females of *boliviensis* are available, no other closely related species was noted in the material examined from Bolivia. There should be no difficulty in associating the sexes when females become available.

***Loxostege saltensis*, new species**

FIGURES 69, 114

FEMALE (fig. 114).—Alar expanse 23 mm. Frons conical. Similar in color and maculation to *pelotasalis*, but *saltensis* is larger and termination of posterior transverse line is farther inward on inner margin. Genitalia (fig. 69): ductus bursae with a rather broad, collarlike expansion between constriction near middle and origin of the ductus seminalis.

TYPE.—Female, U.S. National Museum, USNM 67599, genitalia slide HWC 10,041.

TYPE-LOCALITY.—Salta, Argentina.

FOOD PLANT.—Unknown.

REMARKS.—The species is known only from the type; configuration of the ductus bursae between the ostium and the origin of the ductus seminalis is diagnostic for the female. There is no date of collection on the label to indicate time of flight.

***Loxostege fordi*, new species**

FIGURES 18, 84, 107

MALE (fig. 107).—Alar expanse 18–20 mm. Frons conical. Antenna with cilia short, length one-half or less than one-half as long as width of shaft. Midtibia incrassate, hair-pencil present. Outer spur minute, about one-fifth as long as inner spur. Color and maculation like that of *helvialis*.

Genitalia (fig. 18): Harpe with a small cluster of digitate setae arising from oblique, ridgelike modification near middle of harpe; distal termination of modification broadly rounded, padlike, and scobinate; sacculus with two groups of spines, the outer composed of a rather dense patch of subequal spines, inner of one to three rather stout spines. Aedeagus without cornutus.

FEMALE.—Alar expanse 17–20 mm. Similar to male in color and maculation. Outer spur distinctly less than one-half as long as inner spur. Genitalia (fig. 84) with sclerotization below ventral margin of ostium crinkled, median production narrow.

TYPE.—Male, U.S. National Museum, USNM 67600, genitalia slide HWC 7731.

TYPE-LOCALITY.—Tucson, Ariz.

PARATYPES.—UNITED STATES: Arizona: Christmas, 1 ♂; Redington, 3 ♂; Yuma, 1 ♂, 1♀; Kingman, 1 ♀; Madera Canyon, Santa Rita Mts., 4 ♂, 5 ♀; Madera Canyon, Pima Co., 1 ♂, 5 ♀; Picacho State Park,

Pinal Co., 1 ♂; Santa Rita Mts., Pima Co., 1 ♂. California: Ibanpah Mts., 3 ♂, 2 ♀; Providence Mts., San Bernardino Co., 1 ♂, 1 ♀; Furnace Creek, Death Valley, 1 ♀; Chino Canyon, Palm Springs, 1 ♂; Borrego 1 ♀. MEXICO: Sonora: Carbo [Copete Mine, 30 mi. E.], 1 ♂. Paratypes in U.S. National Museum, American Museum of Natural History, Los Angeles County Museum, and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—April to October.

REMARKS.—*L. fordi* resembles *helvialis* and *polingi* in color and maculation, but in well-marked specimens of *fordi*, a faint subterminal line, absent in both *helvialis* and *polingi*, is discernible on the forewing. Differences in the lengths of the outer spurs distinguish the males of these species from each other; in *helvialis*, the outer is one-half as long as the inner; in *polingi*, it is about one-third as long as the inner; and in *fordi*, it is much shorter, only about one-fifth as long as the inner one. The females are reliably distinguished only by examination of the genitalia.

***Loxostege alpinensis*, new species**

FIGURES 19, 83, 108

MALE (fig. 108).—Alar expanse 20–23 mm. Frons conical. Antenna weakly ciliate. Outer spur slightly less than one-half as long as inner spur. Color and maculation as in *fordi* but with markings often more obscure.

Genitalia (fig. 19) resemble those of *fordi* but with outer group of spines smaller and spinules weaker; inner group in a linear arrangement, extending from near base of outer group to middle of sacculus.

FEMALE.—Alar expanse 21–23 mm. Color and maculation as in male. Genitalia (fig. 83) somewhat similar to those of *fordi* but with median production of ventral margin of ostium broader, not crinkled laterad; origin of ductus seminalis more remote from ostium.

TYPE.—Male, U.S. National Museum, USNM 67601, genitalia slide HWC 7842.

TYPE-LOCALITY.—Paradise, Ariz.

PARATYPES.—UNITED STATES: Arizona: 3 ♂, 3 ♀; White Mts., 15 ♂, 1 ♀; Huachuca Mts., 1 ♀. Texas: Brownsville, 1 ♂, 1 ♀; San Benito, 3 ♂, 4 ♀; Brewster Co., 1 ♂; Montague Co., 1 ♀. Paratypes in the U.S. National Museum and the Canadian National Collection.

FOOD PLANT—Unknown.

IN FLIGHT.—March to September.

REMARKS.—Specimens of this species are likely to be identified in collections as *helvialis* and *Loxostege obliteralis* of authors, not Walker.

Loxostege marculenta (Grote and Robinson)

FIGURES 20, 70, 130

Botys marculenta Grote and Robinson, 1867, Trans. American Ent. Soc., vol.1, p. 23, pl. 2, fig. 21.—Klots, 1942, Bull. American Mus. Nat. Hist., vol. 79, p. 420 [lectotype designation].

Loxostege marculenta (Grote and Robinson).—Forbes, 1920, Cornell Univ. Agric. Exp. Sta. Mem., no. 68, p. 557.

Phlyctaenodes obliteralis (Walker).—Hampson, 1899, Proc. Zool. Soc. London p. 280.

Loxostege obliteralis (Walker) of authors.—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 382.—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 13.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 12.

MALE (fig. 130).—Alar expanse 18–24 mm. Frons conical. Antenna weakly ciliate, cilia about one-half as long as width of shaft. Midtibia slightly thicker than hind tibia, hair-pencil weak. Outer spur about one-fifth as long as inner. Head, thorax, and abdomen pale ochreous above, whitish below. Labial palpus upturned, with third segment short, porrect, concealed by scales; palpus twice as long as width of eye; first segment white, second segment luteous above and laterally, white below, all of third segment luteous.

Forewing: Upper surface pale yellow, somewhat subhyaline; area along costa and markings luteous; with three transverse lines, transverse anterior and posterior lines narrow, somewhat denticulate, subterminal line smooth, somewhat diffuse and broader than anterior and posterior lines. Anterior transverse line bent obliquely outward from costa to vein 1b, thence zig-zag inward and outward to hindwing margin, posterior transverse line bent slightly inward from origin on costa to vein 7, weakly crenulate and broadly concave outwardly to slightly below vein 3, almost directly inward to vein 2, slightly concave outwardly to vein 1b, thence directly posterior to hindwing margin. Subterminal line nearly straight, about midway between outer margin of wing and loop of transverse posterior line at end of cell, subparallel to outer wing margin.

Hindwing: Upper surface coloration similar to that of forewing but paler, with two rather diffuse transverse lines appearing as continuations of transverse posterior and subterminal lines of forewing. Postmedial line occasionally weakly crenulate, extending from costa to slightly below vein 2. The subterminal line smooth, parallel to outer margin and distinctly closer to outer wing margin than to postmedial line. Fringe of both fore- and hindwing concolorous with ground color of wing. Under surface of fore- and hindwing whitish with ochreous tinge; markings stronger on forewing but weaker on both wings than above.

Genitalia (fig. 20): Uncus stout. Harpe with cluster of digitate setae; pad broadly rounded and scobinate distally; sacculus with a long, slender, curved spine and two subequal strongly sclerotized productions, the outer bluntly conical, the inner slender, fingerlike, sometimes sharply pointed distally. Aedeagus stout, without cornutus.

FEMALE.—Alar expanse 21–26 mm. Similar to male in color and maculation. Genitalia (fig. 70) with ventral margin of ostium distinctly concave medially.

LECTOTYPE.—Female, American Museum of Natural History, Grote and Robinson no. 22995.

TYPE LOCALITY.—"Atlantic District (Penna.)."

FOOD PLANTS.—*Ambrosia trifida* and *Solidago*.

DISTRIBUTION.—UNITED STATES: Maine, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, Alabama, Mississippi, Ohio, Illinois, Missouri, Michigan, Iowa, Texas, and New Mexico. CANADA: Ontario, Quebec.

SPECIMENS EXAMINED.—117.

IN FLIGHT.—May to September.

REMARKS.—Labels in collections indicate confusion of *marculenta* with *helvialis*, *obliteralis*, and *mancalis*. The presence of subterminal lines on the fore- and hindwings distinguishes *marculenta* from *helvialis* and others of that group. The markings on the wings of *marculenta* are somewhat diffuse, often obscure, usually more brownish and with the definition weaker than in *mancalis*, and the subterminal line of the hindwing is closer to the outer margin in *mancalis* than in *marculenta*. The frons is conical in *marculenta* and round in *obliteralis*.

Loxostege neomarculenta, new species

FIGURES 21, 71, 131

MALE.—Alar expanse 22–24 mm. With characters of *marculenta* and reliably distinguished from it only by examination of the genitalia. Genitalia (fig. 21): harpe with digitate setae; scobinate area of pad rather narrow; sacculus with a strong subequal bifid spine and a stout, conical production slightly beyond base of spine. Aedeagus without cornutus.

FEMALE (fig. 131).—Alar expanse 22–23 mm. Similar to male in color and maculation. Genitalia (fig. 71) with two conspicuous, pronglike elements from median area of ventral margin of ostium, margins of prongs occasionally somewhat serrate; ductus bursae distinctly angulate at constriction above origin of ductus seminalis.

TYPE.—Male, U.S. National Museum, USNM 67602, genitalia slide HWC 7825.

TYPE-LOCALITY.—Decatur, Ill.

PARATYPES.—Type-locality, 1 ♂. Maryland: Plummers Island, 1 ♂, 1 ♀. Virginia: Skyland, 1 ♀. "West Virginia" [no additional locality], 1 ♀.

FOOD PLANT.—Unknown.

IN FLIGHT.—May to July.

REMARKS.—The male genitalia of *marculenta* and *neomarculenta* differ chiefly in the armature of the sacculus; the bifurcate spine, shorter outer conical production, and narrower pad distinguish the males of *neomarculenta* from those of *marculenta*. The presence of two median prongs arising from the ventral margin of the ostium distinguishes *neomarculenta* females from those of *marculenta*.

***Loxostege pseudobliteralis*, new species**

FIGURES 25, 88, 135

MALE (fig. 135).—Alar expanse 21–24 mm. Frons conical, production moderate. Antenna weakly ciliate. Midtibia incrassate, hair-pencil distinct. Outer spur minute, about one-sixth as long as inner. Color and maculation as in *marculenta* and *neomarculenta* but forewing usually with an indentation of subterminal line evident at vein 2.

Genitalia (fig. 25): Harpe with a cluster of digitate setae; sacculus with spine short, somewhat modified, with one or two spinules basad; subconical production at base of spine bearing several slender setae. Aedeagus attenuate distally and with a small patch of coarse, subconical granules.

FEMALE.—Alar expanse 22–26 mm. Color and maculation like that of male. Genitalia (fig. 88): ductus bursae rather strongly sclerotized at ostium dorsally and ventrally; ventral margin of ostium strongly convex, somewhat crinkled.

LARVA.—Mature, 24 mm long. Head sordid white, with reticulate pale amber markings; a conspicuous small fuscous patch at lateral incision of hind margin. Prothoracic shield sordid white or with a yellowish tinge, narrowly margined with brown or brownish fuscous, the pigmentation slightly interrupted middorsally. Body pinacula of similar brownish pigmentation. Abdominal segments 1–8: Pinacula of seta I and seta II transversely elongate, several times longer than wide; pinacula of seta III subquadrangular longitudinally; pinacula below level of spiracle oval shaped, with pigmentation weaker and less extensive than those dorsad. Ninth abdominal segment: posterior half of pinaculum of paired setae II pigmented; pinaculum bearing setae I–III pigmented; pinaculum of seta VI pigmented. Anal shield with a small, pigmented patch at base of anterior lateral seta.

TYPE.—Male, U.S. National Museum, USNM 67605, genitalia slide OBP 149.

TYPE-LOCALITY.—Paradise, Ariz.

PARATYPES.—UNITED STATES: Arizona: type-locality, 3 ♀; Nogales, 1 ♀; Baboquivari Mts., Pima Co., 1 ♂, 3 ♀; Huachuca Mts., 5 ♂, 1 ♀; Santa Rita Mts., Madera Canyon, 10 ♂, 6 ♀; Santa Rita Mts., 1 ♀; Madera Canyon, Pima Co., 1 ♀; White Mts., 2 ♀; "Arizona" [no additional locality], 1 ♂. Texas: Kerrville, 1 ♂, 1 ♀; San Antonio, 1 ♀; Brewster Co., 2 ♀. MEXICO: Morelos: Cuernavaca, 1 ♀. Paratypes in the U.S. National Museum and the Canadian National Collection.

FOOD PLANT.—Morning glory.

IN FLIGHT.—July to September in the United States, May in Mexico.

REMARKS.—Differences in character of the spine and subconical production of the sacculus distinguish the males of *pseudobliteralis* from those of *marculenta* and *neomarculenta*. The shape and character of sclerotization of the ductus bursae at the ostium is diagnostic for the females of *pseudobliteralis*.

***Loxostege neobliteralis*, new species**

FIGURES 26, 87, 132

MALE (fig. 132).—Alar expanse 18–24 mm. Antenna, frons, tibial character, color, and maculation essentially the same as in *marculenta* and *neomarculenta* but reliably distinguished from them by examination of the genitalia. Genitalia (fig. 26): harpe with digitate setae; a short, sharp, spinelike projection from near middle of oblique modification bearing cluster of digitate setae; pad moderately developed, scobination extensive, rounded or somewhat truncate distally; clasper conspicuously expanded distally and strongly denticulate. Aedeagus without cornutus.

FEMALE.—Alar expanse 22–23 mm. Similar to male in color and maculation. Genitalia (fig. 87): ostium subcircular; margin rather strongly sclerotized; ventral margin straight or nearly so.

LARVA.—Mature, 25 mm long. Similar to larva of *pseudobliteralis* but with marginal fuscous pigmentation of prothoracic shield interrupted on lateral margin; pinacula nonpigmented below level of spiracles on abdominal segments. Ninth abdominal segment with pigmentation of pinaculum bearing paired setae II interrupted on dorsum; pinaculum of setae I–III and that of seta VI nonpigmented, concolorous with adjacent body area. Anterior lateral seta of anal shield without a fuscous patch at its base.

TYPE.—Male, U.S. National Museum, USNM 67604, genitalia slide HWC 10,609.

TYPE-LOCALITY.—Hubberton, Vt.

PARATYPES (16).—UNITED STATES: type-locality, 2 ♂, 1 ♀; Pennsylvania: Pittsburgh, 1 ♂; Oak Station, 2 ♂. New Jersey: Lakehurst, 1 ♀. Maryland: Plummers Island, 1 ♂, 2 ♀. District of Columbia: Washington, 1 ♂. West Virginia: 1 ♀. Mississippi: "Agr. College" [sic] 1 ♀. Indiana: Lafayette, 1 ♂. Iowa: Soldier [near] 1 ♂. CANADA: Quebec: Hummingford, 1 ♀. Paratypes in the U.S. National Museum and the Canadain National Collection.

FOOD PLANT.—*Ipomoea.*

IN FLIGHT.—May to September.

REMARKS.—The short, spinelike projection from near the middle of the lower margin of the harpe, in combination with the denticulate character of the clasper, is diagnostic for males of *neobliteralis*. The female genitalia resemble those of *pseudobliteralis*, but the straight ventral margin of the ostium distinguishes females of *neobliteralis* from those of *pseudobliteralis*.

***Loxostege potosiensis*, new species**

FIGURE 22

MALE.—Alar expanse 22 mm. Frons conical. Antenna ciliate, length of cilia slightly less than width of shaft. Midtibia incrassate; hair-pencil present. Outer spur short, about one-fifth as long as inner spur. Color and maculation as in *neomarculenta*.

Genitalia (fig. 22): Harpe with spine from sacculus simple, rather long and slender; distal margin of pad medially angulate, the lower element with fine spinules, slightly bifurcate distally. Aedeagus somewhat attenuate distally, with a patch of short, stout spinules.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 67603, genitalia slide HWC 12,018.

TYPE-LOCALITY.—Tamazunchale, San Luis Potosi, Mexico.

FOOD PLANT.—Unknown.

IN FLIGHT.—May to August.

REMARKS.—*L. potosiensis* is reliably distinguished from *pseudobliteralis* and several other species only by examination of the genitalia. The medially angulate distal margin of the pad, in combination with the fine spinulation and distal subequal bifurcation of the ventral element, distinguishes *potosiensis* males from all others of the group.

***Loxostege cayugalis*, new species**

FIGURES 35, 85, 136

MALE.—Alar expanse 21–25 mm. Frons conical. Antenna ciliate, cilia about as long as width of shaft. Midtibia incrassate; hair-pencil weak. Outer spur one-fifth as long as inner spur. Similar to *pseudobliteralis* in color and maculation.

Genitalia (fig. 35): Harpe with distal termination of oblique ridge-like modification pointed, curved, hooklike, and nonscobinate; a similar hook at base of cluster of digitate setae; sacculus with two conspicuous spines, one to several small, short spines often associated with outer. Aedeagus with distal patch of subconical granules.

FEMALE (fig. 136).—Alar expanse 26–28 mm. Color and maculation as in male. Genitalia (fig. 85): shape of ostium and character of its ventral margin is diagnostic for females; ostium somewhat variable, nearly round to distinctly oval, ventral margin smooth.

TYPE.—Male, U.S. National Museum, USNM 67606, genitalia slide HWC 7912.

TYPE-LOCALITY.—Cayuga, Guatemala.

PARATYPES.—GUATEMALA: type-locality, 2 ♂; Quirigua, 1 ♂; San Geronimo, 1 ♀. COSTA RICA: Tuis, 1 ♂, 1 ♀; Cachi, 2 ♀. MEXICO: San Luis Potosi, 1 ♀; Tamazunchale, 1 ♀; Morelos: Cuernavaca, 1 ♀; Chiapas: Soconusco (Finca la Violeta), 38 ♂, 15 ♀; Veracruz: Cordoba, 1 ♀. Paratypes in U.S. National Museum, British Museum (Nat. Hist.), and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—April to October.

REMARKS.—*L. cayugalis* is likely to be confused in collections with the species described as *Pachyzancla cynoalis* Druce, which is treated next herein. One of the *cayugalis* paratypes from Cachi, and those from San Geronimo and Cuernavaca, are from the syntypes of *cynoalis*.

***Loxostege cynoalis* (Druce), new combination**

FIGURES 36, 72, 137

Pachyzancla cynoalis Druce, 1895, *in* Godman and Salvin, Biologia Centrali-Americana, Zoology, Lepidoptera, Heterocera, vol. 2, p. 221 [in part].

MALE (fig. 137).—Alar expanse 23 mm. Frons conical. Antenna ciliate, cilia about as long as width of shaft. Upper spur about one-fourth as long as inner spur. Color and maculation similar to that of *cayugalis*.

Genitalia (fig. 36): Harpe with production from base of digitate setae strongly denticulate; dorsal margin of sacculus with two conspicuous, stout spines. Anellus stout. Aedeagus with distal patch of small conical granules.

FEMALE.—Alar expanse 20–21 mm. Similar to male in color and maculation. Genitalia (fig. 72) resemble those of *neomarculenta* but with contour of ductus bursae undulate between ostium and origin of ductus seminalis.

LECTOTYPE.—Male, British Museum (Nat. Hist.), genitalia slide HWC 17,454, present designation.

TYPE-LOCALITY.—Volcan de Chiriqui, Panama.

FOOD PLANT.—Unknown.

DISTRIBUTION.—Guatemala and Panama.

SPECIMENS EXAMINED.—3.

IN FLIGHT.—May.

REMARKS.—Differences in genitalia and length of the upper spurs distinguish the males of *cynoalis* and *cayugalis*, but examination of the genitalia is necessary for reliable identification of the females of these two species.

Druce did not indicate the number of specimens in the type series of *cynoalis* but stated that he had specimens from Mexico (Cuernavaca, Morelos), Guatemala (San Geronimo), Costa Rica (Cachi), and Panama (Chiriqui, Volcan de Chiriqui). Of the five syntypes in the British Museum, the specimen from Volcan de Chiriqui (2000–3000 ft, Champion), a male, was labelled type by Druce and is the one selected herein as lectotype of *cynoalis*. The male and female from Cuernavaca and the female from Cachi are not conspecific with the type and represent a new species treated herein. The abdomen is missing from the female from Geronimo; the placement of that specimen is uncertain.

***Loxostege ecuadoralis*, new species**

FIGURES 37, 138

MALE (fig. 138).—Alar expanse 24–26 mm. Frons weakly conical. Antenna ciliate, cilia about one-half as long as width of shaft. Mid-tibia somewhat incrassate; hair-pencil weak. Outer spur one-fifth as long as inner spur. Similar to *cayugalis* in color and maculation.

Genitalia (fig. 37) resemble those of *cayugalis* but with dorsal element of extenuation of oblique ridgelike modification of harpe somewhat truncate and with a few slender setae; hook at base of cluster of digitate setae stronger and more pointed than in *cayugalis*.

FEMALE.—Alar expanse 26 mm. Similar to male in color and maculation. Genitalia resemble those of both *cayugalis* and the next species; distinguished from *cayugalis* by the much wider nonpigmented, membranous median area dorsad of ostium and the somewhat narrower and less constricted ductus bursae between ostium and origin of ductus seminalis. Distinguished from the next species by the smooth, concave, ventral margin of ostium and the narrower and much shorter ductus bursae between ostium and origin of ductus seminalis.

TYPE.—Male, U.S. National Museum, USNM 67607, genitalia slide HWC 7848.

TYPE-LOCALITY.—"Environs de Loja Equateur."

PARATYPES.—ECUADOR: type-locality, 1 ♂. PERU: Huanuco, 1 ♂. BOLIVIA: Bajo Palmar, Chapare Cochamba, 1 ♀. Paratypes in U.S. National Museum and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—November to January.

REMARKS.—Labels on some specimens of *ecuadoralis* indicate they have been confused in collections with *cynoalis* and *obliteralis*.

Loxostege neotropicalis, new species

FIGURES 24, 86, 133

MALE (fig. 133).—Alar expanse 22–25 mm. Antenna ciliate, cilia about one-half as long as width of shaft. Midtibia incrassate; hair-pencil present. Outer spur short, one-fifth as long as inner spur. Similar to *cayugalis* in color and maculation but distinguished from it by genitalic differences.

Genitalia (fig. 24): Harpe with distal termination of oblique ridge-like modification padlike, spinulation coarse; width of pad and extent of spinulation variable; sacculus with a single, stout spine arising from dorsal margin. Aedeagus robust, with a distal patch of subconical granules.

FEMALE.—Alar expanse 25–28 mm. Similar to male in color and maculation. Genitalia (fig. 86) somewhat like those of *cayugalis* but ostium of different shape and ventral margin of ostium crinkled.

TYPE.—Male, U.S. National Museum, USNM 67608, genitalia slide 7871.

TYPE LOCALITY.—Jalapa, Mexico.

PARATYPES.—MEXICO: Puebla: Zapotitlan de las Salinas, 3 ♂; Guanajuato: Irapuato, 1 ♀. GUATEMALA: Volcan Santa Maria, 1 ♀. COSTA RICA: Juan Vinas, 1 ♀. VENEZUELA: Rancho Grande [Near Maracay], 1 ♂, 1 ♀. Paratypes in U.S. National Museum, American Museum of Natural History, and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—May to October.

Loxostege jaralis (Schaus), new combination

FIGURES 33, 78, 139

Phlyctaenodes jaralis Schaus, 1920, Proc. Ent. Soc. Washington, vol. 22, p. 220.

MALE.—Alar expanse 23 mm. Frons conical. Antenna pubescent. Midtibia incrassate, hair-pencil well developed. Outer spur one-third as long as inner. Similar to *pseudobliteralis* in color and maculation, but with ground color and markings slightly darker and subterminal line of hindwing closer to outer margin.

Genitalia (fig. 33): Sacculus with one to three short, stout spines in outer group; inner group of two to four similar but somewhat larger spines; a larger spine about midway between the two groups. Pad narrow and rather densely spinulate.

FEMALE (fig. 139).—Alar expanse 23–25 mm. Similar to male in color and maculation. Genitalia (fig. 78): configuration of genital plate diagnostic.

TYPE.—Female, U.S. National Museum, USNM 23829, genitalia slide HWC 6008.

TYPE-LOCALITY.—Guadalajara, Jalisco, Mexico.

FOOD PLANT.—Unknown.

DISTRIBUTION.—MEXICO: Oaxaca. Puebla: Zapotitlan de las Salinas. San Luis Potosi: Tamazunchale. Jalisco: Guadalajara. UNITED STATES: Arizona: Redington; Baboquivari Mts., Pima Co.; Madera Canyon, Santa Rita Mts. [The U.S. records are new for the species.]

SPECIMENS EXAMINED.—11.

IN FLIGHT.—May to September.

REMARKS.—The Arizona specimens were confused with *helvialis* in the U.S. National Museum collection, but the presence of a subterminal line on the forewing of *jaralis* distinguishes it from *helvialis*.

The male heretofore has not been associated with females of the species.

Loxostege sacculalis Amsel

FIGURES 31, 118

Loxostege sacculalis Amsel, 1956 (1954), Bol. Ent. Venezuela, vol. 10, p. 250.

MALE (fig. 118).—Alar expanse 19–22 mm. Frons conical. Antenna ciliate, cilia slightly shorter than width of shaft. Midtibia incrassate, hair-pencil weak. Outer spur about one-third as long as inner spur. Similar to *jaralis* in color and maculation.

Genitalia (fig. 31): Essentially like those of *jaralis* but with differences in character of outer termination of dorsal margin of sacculus and contour of ventral margin of oblique ridge of harpe.

TYPE.—Male, Amsel collection.

TYPE-LOCALITY.—Maracay, Venezuela.

FOOD PLANT.—Unknown.

DISTRIBUTION.—Known only from type-locality.

SPECIMENS EXAMINED.—1.

IN FLIGHT.—August.

REMARKS.—No females of *sacculalis* were available for study; the description of the female genitalia was omitted in Amsel's treatment of the species. The differences in the male genitalia of *jaralis* and *sacculalis* may not be constant; a larger series of males and comparison of the female genitalia of both species is needed to determine the status of the two names.

Loxostege mancalis (Lederer)

FIGURES 27, 89, 119

Botys mancalis Lederer, 1863, Weiner Ent. Monatschr., vol. 7, p. 464, table 9, fig. 4.—Munroe, 1958, Canadian Ent., vol. 90, no. 9, p. 511.

Phlyctaenodes mancalis (Lederer).—Hampson, 1899, Proc. Zool. Soc. London, p. 208.

Loxostege mancalis (Lederer).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 382.—Forbes, 1920, Cornell Agric. Exp. Sta. Mem., no. 68, p. 557.—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 131.—McDunnough, 1939, Mem. Southern California Acad. Sci. vol. 2, p. 12.

MALE (fig. 119).—Alar expanse 20–24 mm. Frons conical. Antenna ciliate, cilia about one-half as long as width of shaft. Midtibia incrassate, hair-pencil well developed. Outer spur one-third as long as inner. Similar to *marculenta* in color and maculation, but specimens of *mancalis* are somewhat duller and less ochreous, with definition of markings sharper, subterminal band of forewing usually broader anteriorly, and subterminal line of hindwing closer to outer margin (pale ochreous area between line and outer margin of wing narrower than subterminal line).

Genitalia (fig. 27): Harpe without digitate setae; with two conspicuous subequal hooklike structures; the small one downcurved, arising from near middle of harpe and extending below ventral margin; the large one from sacculus, rather broad basally, distal termination a sharp point; pad moderately broad, rounded, scobinate. Aedeagus somewhat attenuate distally, bluntly pointed and with a patch of small spinules.

FEMALE.—Alar expanse 22–24 mm. Similar to male in color and maculation. Genitalia (fig. 89): ductus bursae rather strongly sclerotized from ostium to junction with ductus seminalis and somewhat incrassate near middle; ostium with lateral production short, spurlike.

LARVA.—Mature, 28–30 mm long. Head pale amber, reticulation weak. Body color sordid white. Pigmentation of markings on prothoracic shield and body pinacula brown or blackish. Prothoracic shield with pigmentation restricted to lateral margin. Pinacula of seta Ia–Ib and IIa–IIb of meso- and metathorax moderately convex, irregularly ovoid or round in shape, pigmentation strong. On abdominal segements 1–8: Pinacula of seta I and seta II conspicuously large, round and flat; pinaculum of seta III reniform and smaller than those of setae I and II; pigmentation of setae I, II, and III strong; pinacula of setae below level of spiracles not pigmented or the pigmentation obsolescent centrally. Ninth abdominal segment with pinacula not pigmented.

LECTOTYPE.—Male, Naturhistorische Museum, Vienna, genitalia slide HWC 17,238.

TYPE-LOCALITY.—North America.

PARALECTOTYPE.—Female, British Museum (Nat. Hist.), genitalia slide HWC 17,327.

FOOD PLANTS.—*Amaranthus retroflexus*, mint, morning glory, tobacco, and *Rumex*.

DISTRIBUTION.—UNITED STATES: Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Florida, Louisiana, Mississippi, Texas, Oklahoma, Nebraska, Missouri, Illinois, Arizona. MEXICO: Sonora, Jalisco, Morelos, Puebla, Oaxaca. COSTA RICA: Avangarez.

SPECIMENS EXAMINED.—169.

IN FLIGHT.—March to September.

REMARKS.—In describing *mancalis*, Lederer indicated that the type series consisted of nine specimens, which were from North America and Brazil "Ex Mus. Caesar, Felder." Only two of these could be located, a male, by Dr. Kasy of the Vienna Museum, and the other, a female, by Mr. Whalley, at the British Museum. I hereby designate the male as lectotype and the female as paralectotype of the species. It is not likely that the syntypes from Brazil are the same species as those from North America, for I have found no specimens of *mancalis* in the considerable amount of material from Brazil and other South American countries that I have examined.

The lack of digitate setae, in combination with the character of the spine arising from near the middle of the ventral margin of the harpe and the hook arising from the sacculus, is diagnostic for the male genitalia of *mancalis*. The rather smooth, straight, ventral margin and short lateral, spurlike production of the ostium, in combination with the incrassate character of the ductus bursae between the ostium and ductus seminalis, distinguish the females of *mancalis* from all others of the genus.

***Loxostege ramsdenalis* (Schaus), new combination**

FIGURES 28, 74, 120

Phlyctaenodes ramsdenalis Schaus, 1920, Proc. Ent. Soc. Washington, vol. 22, p. 219.

MALE.—Alar expanse 20–23 mm. Frons conical. Midtibia incrassate, hair-pencil distinct. Similar to *mancalis* in color and maculation but with indentation of transverse posterior line deeper and more acute between veins 1b and 2 of forewing.

Genitalia (fig. 28): Somewhat similar to those of *mancalis* but differing as follows: harpe with a cluster of digitate setae; sclerotized production from near middle of ventral margin bluntly rounded,

spatulate; distal pad narrow, spinules rather stout; sacculus with hook more oblique inwardly and a small spine basad.

FEMALE (fig. 120).—Alar expanse 17–20 mm. Color and maculation as in male. Genitalia (fig. 74): ostium with ventral median emargination deep and broadly concave.

TYPE.—Female, U.S. National Museum, USNM 23827, genitalia slide HWC 6012.

TYPE-LOCALITY.—Santiago, Cuba.

FOOD PLANT.—Unknown.

DISTRIBUTION.—CUBA: Santiago. CAYMAN ISLANDS: Grand Cayman. MEXICO: Jalapa and Oaxaca. GUATEMALA: Volcan Santa Maria. VENEZUELA: Rancho Grande [near Maracay]. BRAZIL: Pernambuco. BOLIVIA: Corioco.

SPECIMENS EXAMINED.—27.

IN FLIGHT.—April to June.

REMARKS.—As there were no examples of *mancalis* in the South American material studied, and as *ramsdenalis* is so similar to *mancalis* in size, color, and maculation, it seems likely that at least part of the Brazilian syntypes apparently misidentified as *mancalis* (q.v.) are in fact *ramsdenalis*. In collections, *ramsdenalis* has also been confused with *Phlyctaenodes conisphora* Hampson.

***Loxostege pergilvalis* (Hulst)**

FIGURES 30, 79, 122

Botis pergilvalis Hulst, 1886, Trans. American Ent. Soc., vol. 13, p. 151.—Klots, 1942, Bull. American Mus. Nat. Hist., vol. 79, art. 6, p. 421 [lectotype designation].

Botys pergilvalis Hulst.—Hampson, 1899, Proc. Zool. Soc. London, p. 208. [A synonym of *Phlyctaenodes coloradensis* (Grote and Robinson) in error.]

Loxostege pergilvalis (Hulst).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 382.—Barnes and McDunnough, 1916, Contr. Nat. Hist. Lepid., vol. 3, no. 3, p. 191 [type restricted to female of the Henry Edwards collection].—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 131.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 12. [As synonym of *coloradensis* (Grote and Robinson) in error.]

MALE (fig. 122).—Alar expanse 20–26 mm. Frons conical. Antenna weakly ciliate. Midtibia weakly incrassate, hair-pencil absent or obsolescent. Outer spur slightly less than one-half as long as inner. Resembles *mancalis* in color and maculation but differs as follows: Transverse lines narrower and weaker; subterminal line of forewing little, if any, broader anteriorly; hindwing with postmedial line concave outwardly, postmedial and subterminal lines often obsolescent, interrupted, dotlike.

Genitalia (fig. 30): Harpe with cluster of digitate setae; pad rounded distally, the spinulation fine, dense; sacculus with two rather large conspicuous spines and a group of small spines adjacent to

base of the large outer spine; dorsal margin of sacculus with median subtriangular production.

FEMALE.—Alar expanse 18–28 mm. Color and maculation as in male. Genitalia (fig. 79): rugose character of postgenital plate diagnostic.

LECTOTYPE.—Female, American Museum of Natural History, genitalia slide FHR 4634.

TYPE-LOCALITY.—Arizona.

FOOD PLANT.—Corn?

DISTRIBUTION.—UNITED STATES: Arizona, New Mexico, Texas, Iowa, Illinois, and Delaware. CANADA: Ontario. MEXICO: Federal District, Puebla, and Jalisco.

SPECIMENS EXAMINED.—220.

IN FLIGHT.—May to September.

REMARKS.—Hulst (1886) stated that the type series of *pergilvalis* consisted of three females from Arizona. Hampson (1899), followed by authors of subsequent check lists of American Lepidoptera, erred in his treatment of *pergilvalis* as a synonym of *coloradensis*. The male specimen from Arizona in the Neumoegen collection that bears a *pergilvalis* type label of Hulst (to which reference was made by Barnes and McDunnough (1916)), agrees with *coloradensis* in color, maculation, and genitalia and is definitely conspecific with *coloradensis;* however, the female type designated by (Barnes and McDunnough, 1916), and also subsequently designated lectotype by Klots (1942), is distinct from *coloradensis* and is a valid species.

L. pergilvalis and *coloradensis* differ in both maculation and genitalia. Postmedial and subterminal lines are present on the hindwing of *pergilvalis* and are absent in *coloradensis* (fig. 123). The harpe of *pergilvalis* has a cluster of digitate setae; that of *coloradensis* (fig. 17) is without digitate setae. Differences in the character of the sclerotization adjacent to the ostium readily distinguish the female genitalia of *pergilvalis* from those of *coloradensis* (fig. 77).

Of the rather large series at hand, only one specimen had a plant association; it is labelled "on corn" and is from Coapa, D. F., Mexico. Whether it was collected as an adult on corn or reared from a larva feeding on corn is not definitely ascertainable.

Loxostege coloradensis (Grote and Robinson)

FIGURES 17, 77, 123

Botis coloradensis Grote and Robinson, 1867, Trans. American Ent. Soc., vol. 1, p. 25.

Botys coloradensis Grote and Robinson.—Klots, 1942, Bull. American Mus. Nat. Hist., vol. 79, art. 6, p. 419.

Phlyctaenodes coloradensis (Grote and Robinson).—Hampson, 1899, Proc. Zool. Soc. London, p. 208.

Lozostege coloradensis (Grote and Robinson).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 382.—Barnes and McDunnough, 1916, Contr. Nat. Hist. Lepid., vol. 3, no. 3, p. 191; 1917, Checklist of the Lepidoptera of boreal America, p. 131.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 12.

MALE.—Alar expanse 23–31 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate, hair-pencil present, buff. Outer spur minute, about one-sixth as long as inner. Color whitish, with a slight ochreous tinge. Markings of forewing similar to those of *pergilvalis* but somewhat more ochreous and weaker. Hindwing whitish, subhyaline, without postmedial and subterminal lines, or the postmedial barely discernible.

Genitalia (fig. 17): Harpe without digitate setae; sacculus with two conspicuous subequal spines and an outer cluster of small, subequal spines. Aedeagus with distal patch of short, sharp, spinules.

FEMALE (fig. 123).—Alar expanse 27–31 mm. Color and maculation as in male. Genitalia (fig. 77): ventral margin of ostium broadly concave, shallow; sclerotization laterad of ostium concave, granulose. Spinulation of bursa copulatrix conspicuous from origin of accessory pouch to junction with ductus bursae.

LARVA.—Penultimate stage, 18 mm. Head pale amber, reticulation weak; a small fuscous patch at lateral incision on hind margin. Body sordid white. Pigmentation of markings of prothoracic shield and body pinacula brownish. Thorax: anterior and lateral margin of prothoracic shield with a brownish patch at bases of setae Ia, Ib, Ic, and IIc; pigmentation discontinuous on dorsum and between setae Ia and Ib; posterior margin concolorous with adjacent body area, without dark markings; prespiracular shield and pinaculum of group VI conspicuously pigmented. Meso- and metathorax with pinacula of setae Ia–Ib, IIa–IIb, IV, V, and VI rather large, pigmentation strong; pinaculum of seta III smaller, pigmentation weaker. Abdominal segments: pinacula of setae I and II of first and eighth segments more strongly pigmented than on second to seventh segments; pinacula of setae III darkly pigmented and of approximately equal size on segments 1–8. Pinacula below level of spiracles not pigmented on segments 1–8. Pinacula of ninth segment not pigmented. Anal shield without conspicuous markings.

LECTOTYPE.—Female, American Museum of Natural History, slide no. 22998 Grote and Robinson, present designation.

TYPE-LOCALITY.—Colorado.

FOOD PLANT.—Wild sunflower.

DISTRIBUTION.—Arizona, Utah, Colorado, Iowa, Kansas, Missouri, Oklahoma, and Texas.

SPECIMENS EXAMINED.—51.

IN FLIGHT.—April to September.

REMARKS.—See the discussion of *pergilvalis* (p. 24).

***Loxostege cochisensis*, new species**

FIGURES 39, 82, 121

MALE.—Alar expanse 21–26 mm. Frons conical. Antenna weakly ciliate. Midtibia slightly more incrassate than hind tibia; hair-pencil obsolescent or absent. Outer spur one-half as long as inner. Resembles *pergilvalis* but with ground color usually more ochreous and transverse lines of forewing slightly smoother: postmedial line of hindwing absent, or if evident, smooth, somewhat diffuse, termen concolorous with fringe.

Genitalia (fig. 39): Uncus somewhat narrower apically. Harpe with digitate setae; outer half of dorsal margin of sacculus somewhat produced, with numerous, short inwardly directed spines. Aedeagus without cornuti.

FEMALE (fig. 121).—Alar expanse 19–26 mm. Similar to male in color and maculation. Genitalia (fig. 82): postgenital plate strongly sclerotized, concave, with distinct transverse ridges.

TYPE.—Male, U.S. National Museum, USNM 67609, genitalia slide OBP 147.

TYPE-LOCALITY.—Palmerlee, Ariz.

PARATYPES.—Arizona: type-locality, 1 ♀; [no additional locality], 2 ♀; Santa Rita Mts. 1 ♂, 1 ♀; Southwestern Res. Sta., Chiricahua Mts., Cochise Co., 1 ♂, 2 ♀; Madera Canyon, Santa Rita Mts., 2 ♂, 3 ♀; Madera Canyon, Santa Rita Mts., Pima Co., 4 ♀; Huachuca Mts., 1 ♀. Texas: The Basin, Chisos Mts., Brewster Co., 2 ♂, 1 ♀. Paratypes in the U.S. National Museum, Los Angeles County Museum, and the collection of Mr. C. P. Kimball.

FOOD PLANT.—Unknown.

IN FLIGHT.—June to September.

REMARKS.—The narrower uncus, in combination with the character of the spinulation on the dorsal margin of the sacculus, is diagnostic for the male genitalia of *cochisensis*. The character of the postgenital plate (concave with transverse ridges) distinguishes the female genitalia of *cochisensis* from all others of the genus.

***Loxostege jacalensis*, new species**

FIGURES 38, 134

MALE (fig. 134).—Alar expanse 21 mm. Frons conical. Antenna weakly ciliate, cilia about one-half as long as width of shaft. Midtibia weakly incrassate; hair-pencil absent or obsolescent. Outer spur slightly less than one-half as long as inner. Similar to *cochisensis* in

color and markings. Genitalia (fig. 38) similar to those of *cochisensis* but with uncus stouter, fewer spines on dorsal margin of sacculus, spines coarser, anellus broader basally, outer margins of lateral arms parallel or nearly so.

FEMALE.—Unknown.

TYPE.—Male, Canadian National Collection, genitalia slide HWC 17,616.

TYPE-LOCALITY.—Jacala, Hidalgo, Mexico.

FOOD PLANT.—Unknown.

REMARKS.—The species is known only from the type specimen.

***Loxostege yucatanalis*, new species**

FIGURE 48

MALE.—Alar expanse 20 mm. Frons conical. Antenna weakly ciliate, cilia about one-half as long as width of shaft. Outer spur one-fourth as long as inner. Similar to *jacalensis* in color and maculation, but somewhat paler. Genitalia (fig. 48) resemble those of *pseudobliteralis* but harpe without digitate setae, pad broader with spinulation finer, aedeagus more robust, cornutus stronger.

FEMALE.—Unknown.

TYPE.—Male, Canadian National Collection, genitalia slide HWC 17,620.

TYPE-LOCALITY.—Chichen Itza, Yucatan, Mexico.

FOOD PLANT.—Unknown.

REMARKS.—The species is known only from the type-specimen.

***Loxostege autocratoralis* Dyar**

FIGURES 41, 93, 115

Loxostege autocratoralis Dyar, 1912, Pomona College Journ. Ent., vol. 4, no. 2, p. 747.

Phlyctaenodes autocratoralis (Dyar).—Dyar, 1914, Proc. U.S. Nat. Mus., vol. 47, p. 281.

MALE.—Alar expanse 20–24 mm. Frons conical. Midtibia incrassate, hair-pencil distinct. Outer spur one-third as long as inner. Resembles *nayaritensis* in color and maculation but somewhat paler, subterminal line present on forewing.

Genitalia (fig. 41): Harpe without digitate setae; dorsal margin of sacculus straight or nearly so, extending almost to middle of harpe. Aedeagus with a rather large patch of spinelike cornuti.

FEMALE (fig. 115).—Alar expanse 18–25 mm. Similar to male in color and maculation. Genitalia (fig. 93): postgenital plate strongly sclerotized, concave, scobinate. Sclerotized part of ductus bursae between ostium and origin of the ductus seminalis about as wide as long; ductus bursae rather conspicuously enlarged adjacent to origin of ductus seminalis, with longitudinal grooves.

TYPE.—Female, U.S. National Museum, USNM 14432, genitalia slide HWC 6002.

TYPE-LOCALITY.—Cuernavaca, Mexico.

FOOD PLANT.—Unknown.

DISTRIBUTION.—MEXICO: Federal District: Mexico City. Morelos: Cuernavaca. Vera Cruz: Jalapa. San Luis Potosi: Tamazunchale. Michoacan: Zitacuaro. Chiapas: Soconusco. Colima.

SPECIMENS EXAMINED.—13.

IN FLIGHT.—May and June.

REMARKS.—In collections, specimens of *autocratoralis* have been confused with those of *helvialis* and *Phlyctaenodes cupreicostalis* Dyar, but the presence of a subterminal line on the forewing of *autocratoralis* readily distinguishes it from those two species. Heretofore, *autocratoralis* has been known only by females.

***Loxostege corozalis*, new species**

FIGURES 40, 92, 116

Phlyctaenodes helvialis (Walker).—Dyar, 1914, Proc. U.S. Nat. Mus., vol. 47, p. 281.

MALE (fig. 116).—Alar expanse 18–23 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate; hair-pencil present. Outer spur less than one-half as long as inner. Resembles *autocratoralis* in color and maculation but with subterminal line of forewing weaker, often obsolete posteriorly; hindwing usually with an obscure, very narrow ochreous area between subterminal line and termen.

Genitalia (fig. 40): Similar to those of *autocratoralis* but harpe with a cluster of digitate setae; dorsal margin of sacculus shorter, terminating distinctly before middle of harpe; cornuti of aedeagus much weaker, the patch scobinate or obsolescent.

FEMALE.—Alar expense 17–23 mm. Similar to male in color and maculation. Genitalia (fig. 92): somewhat like those of *autocratoralis* but with sclerotization of postgenital plate weaker; ductus bursae between ostium and origin of ductus seminalis narrower, the sclerotization longer, about two times as long as wide and without conspicuous longitudinal grooves or enlargement adjacent to origin of ductus bursae.

TYPE.—Male, U.S. National Museum, USNM 67610, genitalia slide HWC 7864.

TYPE-LOCALITY.—Corozal, Panama Canal Zone.

PARATYPES.—PANAMA CANAL ZONE: type-locality, 3 ♂, 8 ♀; Barro Colorado Is., Gatun Lake, 3 ♂, 2 ♀; Tabernilla, 1 ♀. PANAMA: La Chorrera, 3 ♀. COSTA RICA: Avangarez, 1 ♂; Juan Vinas, 2 ♂, 1 ♀. GUATEMALA: Cayuga, 1 ♀. MEXICO: Vera Cruz: Jalapa, 1 ♀; San Luis

Potosi: Tamazunchale, 1 ♀; Chiapas: Santa Anita, 1 ♂, 1 ♀; Soconusco (Finca la Violeta), 2 ♂, 2 ♀; Tepechual, 1 ♀. Yucatan: Chichen Itza, 21 ♂, 30 ♀; Oaxaca: Tuxtepec, 1 ♂, 1 ♀. Morelos: Cuernavaca, 2 ♀. Nayarit: El Pautanal, 1 ♀. Zacualpan: 1 ♀. Paratypes in collections of the U.S. National Museum, American Museum of Natural History, Cornell University, and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—April to November.

REMARKS.—Labels in collections indicate confusion of *corozalis* with both *helvialis* and *mancalis*. The presence of a subterminal line on the forewing of *corozalis* distinguishes it from *helvialis*, and the transverse posterior line on the forewing of *mancalis* is more denticulate than that of *corozalis*.

Loxostege huachucalis, new species

FIGURES 46, 75, 124

MALE (fig. 124).—Alar expanse 21–24 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate, hair-pencil weak. Outer spur one-fourth as long as inner spur. Resembles *mancalis* in color and maculation but with markings somewhat more ferruginous, lines more denticulate, definition sharper, and postmedial line of hindwing broadly concave.

Genitalia (fig. 46): Harpe without digitate setae; sacculus with two conspicuous, subequal spines and an outer cluster of small spines; pad with distal margin concave or somewhat angulate medially, lower element densely spinulate, spinules moderately long and slender. Aedeagus stout, somewhat bifid distally; the attennuate sclerotizations subequal, with the dorsal one denticulate.

FEMALE.—Alar expanse 21–24 mm. Similar to male in color and maculation. Genitalia (fig. 75): eighth sternum conspicuously pigmented and strongly scobinate, midventral configuration as illustrated. Ductus bursae strongly sclerotized from ostium to origin of ductus seminalis and conspicuously reduced in size from midway between ostium and origin of ductus seminalis.

TYPE.—Male, U.S. National Museum, USNM 67611, genitalia slide HWC 7834.

TYPE-LOCALITY.—Paradise, Cochise Co., Ariz.

PARATYPES.—Arizona: type-locality, 1 ♂, 2 ♀; so. Arizona, 3 ♂, 3 ♀; Palmerlee, 6 ♂, 6 ♀; Redington, 1 ♀; Huachuca Mts., 1 ♂, 4 ♀; Madera Canyon, Santa Rita Mts, 3 ♂, 4 ♀. Paratypes in collections of the U.S. National Museum and the Los Angeles County Museum.

FOOD PLANT.—Unknown.

IN FLIGHT.—June to August.

REMARKS.—*L. huachucalis* resembles *coloradensis* much more closely in genitalia than in habitus. In the male genitalia of *huachucalis* the pad is narrower and more extenuate and the aedeagus is stouter, with distal bifid elements more strongly developed than in *coloradensis*. The female genitalia of *coloradensis* are distinguished from those of *huachucalis* by a difference in the midventral configuration of the eighth sternum, the inconspicuous reduction in width of the ductus bursae from midway between the ostium and the origin of the ductus seminalis, and the stronger spinulation adjacent to junction of the ductus bursae and bursa copulatrix.

***Loxostege marialis*, new species**

FIGURES 47, 76, 125

MALE (fig. 125).—Alar expanse 24 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate; hair-pencil distinct, white. Outer spur one-fourth as long as inner. Similar to *hauchucalis* but with ground color less ochreous, markings somewhat finer, wings slightly more hyaline.

Genitalia (fig. 47): Harpe without digitate setae; pad moderately broad, spinulate; sacculus with two conspicuous subequal spines. Aedeagus stout, median constriction conspicuous, bifid distally, the dorsal element strongly sclerotized, narrow, spinulate.

FEMALE.—Alar expanse 24–26 mm. Similar to male in color and maculation. Genitalia (fig. 76): ductus bursae of approximately same width from ostium to origin of ductus seminalis; midventral configuration of eighth sternum widest at ostium, lateral margins subparallel, pigmentation and granulation ending before ostium.

TYPE.—Male, U.S. National Museum, USNM 67612, genitalia slide HWC 7903.

TYPE-LOCALITY.—Volcan Santa Maria, Guatemala.

PARATYPES.—Guatemala: type-locality, 3 ♂, 3 ♀; Duenas, 1 ♀; Calderas, 1 ♂. Paratypes in the U.S. National Museum, British Museum (Nat. Hist.), and Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—June.

REMARKS.—The lack of an outer cluster of small spines on the sacculus, the broader pad, and stouter aedeagus of *marialis* distinguishes its males from those of *huachucalis*. The nonpigmented, smooth, membranous, concave area at the base of the midventral configuration, in combination with the rather inconspicuous constriction of the ductus bursae midway between the ostium and the origin of the ductus seminalis, is diagnostic of the females of *marialis*.

The paratypes from Calderas and Duenas are from the syntype series of *Phlyctaenodes conisphora* Hampson.

***Loxostege purulhalis*, new species**

FIGURES 45, 126

MALE (fig. 126).—Alar expanse 20–21 mm. Frons conical. Antenna weakly ciliate. Midtibia weakly incrassate, hair-pencil obsolescent. Similar to *marialis* in color and maculation, but somewhat smaller than that species.

Genitalia (fig. 45): Harpe without digitate setae; pad broad, ventral half spinulate; dorsal margin of sacculus with a single spine from near middle and an outer cluster of short, stout spinules. Aedeagus slightly bifid distally, the dorsal element short, attenuate, and with short, stout spinules.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 67613, genitalia slide HWC 7905.

TYPE-LOCALITY.—Purulha, Guatemala.

PARATYPE.—Type-locality, 1 ♂; in collection of the U.S. National Museum.

FOOD PLANT.—Unknown.

IN FLIGHT.—July.

REMARKS.—No reliable differences in color and maculation were noted to distinguish *purulhalis* from *marialis*; however, in *purulhalis* the outer spur is longer and the hair-pencil is weaker than in *marialis*.

The genitalia of *purulhalis* are more like those of *huachucalis* than of *marialis*, but the presence of only one median spine from the sacculus and the wider pad distinguish the males of *purulhalis* from those of *huachucalis*.

***Loxostege conisphoralis*, new species**

FIGURES 44, 80, 127

MALE (fig. 127).—Alar expanse 22–23 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate; hair-pencil present, white. Outer spur one-fifth as long as inner spur. Color and maculation similar to that of *marialis* but hindwing with brownish or fuscous accentuation of veins 3 and 4 adjacent to cell and postmedial line not as broadly concave.

Genitalia (fig. 44): Harpe without digitate setae; pad rather elongate and of uniform width, densely spinulate distally; sacculus with a conspicuous scalpel-like spine arising from near middle of dorsal margin and a rather large outer cluster of subequal spines. Aedeagus with an inconspicuous patch of minute spinules as cornuti.

FEMALE.—Alar expanse 22–26 mm. Similar to male in color and maculation. Genitalia (fig. 80): ductus bursae strongly sclerotized from ostium to origin of ductus seminalis, the sclerotization about as wide as long; median ventral configuration of eighth sternum below

ostium as figured; granulation strong at junction of ductus bursae and bursa copulatrix.

TYPE.—Male, U.S. National Museum, USNM 67614, genitalia slide HWC 7901.

TYPE-LOCALITY.—Chiapas, Mexico.

PARATYPES.—MEXICO: Chiapas: "Santa Anita," 1 ♂; La Granja, 1 ♂; Soconusco (Finca La Violeta), 33 ♂, 5 ♀. Vera Cruz: Santa Lucrecia, 1 ♀. Yucatan: Chichen Itza, 1 ♀. GUATEMALA: Chejel, 1 ♀; Volcan Santa Maria, 1 ♂. COSTA RICA: Juan Vinas, 1 ♀. Paratypes in the U.S. National Museum, American Museum of Natural History, and the Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—June to November.

REMARKS.—The scalpel-like spine arising from the dorsal margin of the sacculus and the character of the outer cluster of spinules are diagnostic for the males of *conisphoralis*, and the midventral configuration of the eighth sternum, in combination with the short, broad sclerotization of the ductus bursae between the ostium and origin of the ductus seminalis, distinguish the females of *conisphoralis* from all others in the genus.

***Loxostege conisphora* (Hampson), new combination**

FIGURES 23, 73, 128

Phlyctaenodes conisphora Hampson, 1913, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 517.

MALE (fig. 128).—Alar expanse 22 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate, hair-pencil present, white. Outer spur about one-fifth as long as inner spur. Resembles *marialis* in color and maculation but wings with brownish irroration and definition of subterminal lines stronger, and veins 3 and 4 of hindwing with fuscous accentuation adjacent to cell.

Genitalia (fig. 23): Harpe with digitate setae; medial spine long, slender, bifid distally; dorsal margin of sacculus with outer half broadly convex.

FEMALE.—Alar expanse 24 mm. Color and maculation as in male. Genitalia (fig. 73) similar to those of *neomarculenta* but with ventral margin of ostium deeply incised medially and lateral margins of the two pronglike projections strongly denticulate.

LECTOTYPE.—Male, British Museum (Nat. Hist.), genitalia slide BM no. 9588, present designation.

TYPE-LOCALITY.—Calderas, Guatemala.

PARALECTOTYPE.—Irazu, Costa Rica, 1 ♂, British Museum (Nat. Hist.), genitalia slide HWC 17,451, present designation.

DISTRIBUTION.—Guatemala, Costa Rica, and Mexico.

FOOD PLANT.—Unknown.

SPECIMENS EXAMINED.—3.

REMARKS.—Dissection of the syntypes of *conisphora* revealed the presence not only of *conisphora* and *marialis*, but another undescribed species, the discussion of which follows that of the next species.

Loxostege jaliscalis, new species

MALE.—Alar expanse 25 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate; hair-pencil present. Outer spur about one-fifth as long as inner spur. Resembles *conisphoralis* but differs from it as follows: wings more ochreous, pale straw yellow, and without irroration, markings pale buff; transverse and postmedial lines wider and smoother; subterminal and terminal lines weaker and more diffuse; fringe pale buff; hindwing with accentuation of veins 3 and 4 adjacent to cell absent or obsolescent.

Genitalia: Like those of *conisphoralis* but with uncus somewhat narrower, spine and distal bifurcation stronger, and distal convex production of sacculus much reduced.

FEMALE.—Alar expanse 25 mm. Similar to male in color and maculation, except accentuation of veins 3 and 4 of hindwing at cell is stronger. Genitalia similar to those of *conisphoralis* but with sclerotization of ductus bursae from ostium to origin of ductus seminalis shorter, conspicuously constricted about midway between ostium and angulate lateral production; and median incision of ventral margin of ostium concave and not as deep as in *conisphoralis*.

TYPE.—Male, Canadian National Collection, genitalia slide HWC 17,617.

TYPE-LOCALITY.—San Luis Potosi, Mexico [46 mi. N.].

PARATYPE.—Tepititlan, Jalisco, Mexico, 1 ♀. Canadian National Collection.

FOOD PLANT.—Unknown.

IN FLIGHT.—August and September.

Loxostege volcanensis, new species

FIGURES 49, 81, 129

MALE (fig. 129).—Alar expanse 12–22 mm. Frons conical. Antenna pubescent, cilia very short. Midtibia incrassate, hair-pencil brownish. Outer spur one-sixth as long as inner spur. Resembles *conisphoralis* in color and maculation but hindwing with postmedial line smoother, not conspicuously bent inward at vein 3, origins of veins 3 and 4 without adjacent brownish accentuation.

Genitalia (fig. 49): Uncus conspicuously narrower apically. Harpe without digitate setae; pad narrow, densely spinulate distally; sacculus with large spine, greatly expanded basally, arising from near middle

of dorsal margin. Aedeagus stout, cornutus an elongate, serrate, sclerotized patch.

FEMALE.—Alar expanse 19–21 mm. Similar to male in color and maculation. Genitalia (fig. 81): production of ductus bursae ventrad of the ostium with conspicuous medial emargination.

TYPE.—Male, U.S. National Museum, USNM 67615, genitalia slide HWC 6004.

TYPE-LOCALITY.—Volcan Santa Maria, Guatemala.

PARATYPES—GUATEMALA: type-locality, 2 ♂. MEXICO: Cordoba, 1 ♀; Orizaba, 1 ♀; Jalapa, 2 ♀; Oaxaca, 1 ♂; Chiapas: La Granja, 1 ♀; Soconusco (Finca La Violeta), 5 ♂. COSTA RICA: Juan Vinas, 2 ♀, Irazu, 1 ♀. VENEZUELA: Rancho Grande (near Maracay), 1 ♀. Paratypes in the U.S. National Museum, American Museum of Natural History, Canadian National Collection, and British Museum (Nat. Hist.).

FOOD PLANT.—Unknown.

IN FLIGHT.—January to October.

REMARKS.—The attenuate character of the uncus distinguishes the males of *volcanensis* from all others of the genus, and the conspicuous median emargination of the production of the ductus bursae below the ostium is diagnostic for the females of the species. The female from Irazu is from the syntype series of *conisphora*.

***Loxostege mellinialis* (Druce), new combination**

FIGURES 42, 91, 143

Epichronistis mellinialis Druce, 1899, *in* Godman and Salvin, Biologia Centrali-Americana, Zoology, Lepidoptera, Heterocera, vol. 2, p. 559.

Phlyctaenodes phrixalis Dyar, 1914, Proc. U.S. Nat. Mus., vol. 47, no. 2059, p. 395. [New synonymy.]

MALE.—Alar expanse 28–32 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate; hair-pencil well developed, white. Outer spur one-third as long as inner spur. Forewing straw-yellow, slightly irrorated with buff. Markings as in female (fig. 42). Hindwing somewhat paler than forewing, without buff irroration; postmedial line terminating at fold between veins 1c and 2; brownish patch adjacent to base of vein 2 variable in size and intensity; wedge-like brownish accentuation of veins at termen variable in intensity, occasionally absent or obsolescent.

Genitalia (fig. 42): Harpe with digitate setae; a conspicuous denticulate production arising from dorsal margin of sacculus; pad spinulate ventrally, brushlike. Aedeagus bifid distally, elements subequal, the dorsal one attenuate and spinulate.

FEMALE (fig. 143).—Alar expanse 27–31 mm. Similar to male in color and maculation. Genitalia (fig. 91): eighth sternum finely

spinulate, rather smooth in appearance but with a few transverse folds or ridges and a pair of pouchlike receptacles laterad of the ostium, their long axes transverse.

TYPES.—British Museum (Nat. Hist.): *mellinialis*. U.S. National Museum: *phrixalis*, USNM 16510, genitalia slide HWC 6014.

TYPE-LOCALITIES.—Duenas, Guatemala (*mellinialis*); Zacualpan, Mexico (*phrixalis*).

DISTRIBUTION.—GUATEMALA: Duenas. MEXICO: Zacualpan. UNITED STATES: Arizona [new record for the United States].

FOOD PLANT.—Unknown.

SPECIMENS EXAMINED.—25.

IN FLIGHT.—July to September.

REMARKS.—*L. mellinialis* and *phrixalis* were previously known only from the types, and I am indebted to Mr. Whalley for comparison of my material with that of *mellinialis* in the British Museum (Nat. Hist.).

***Loxostege venadialis*, new species**

FIGURES 43, 90, 145

MALE.—Alar expanse 32 mm. Frons conical. Antenna ciliate, length of cilia equal to width of shaft. Midtibia incrassate; hair-pencil well developed, white. Outer spur slightly less than one-half as long as inner spur. Color and maculation as in *mellinialis* but with definition of markings weaker, without wedgelike buff or brownish accentuation of veins at termen, and second and third segments of labial palpus paler.

Genitalia (fig. 43): Similar to those of *mellinialis* but with uncus stouter, sacculus wider with dorsal margin somewhat undulate, aedeagus more robust and longer.

FEMALE (fig. 145).—Alar expanse 27–31 mm. Similar to male in color and maculation. Genitalia (fig. 90) resemble those of *mellinialis* but with eighth sternum more strongly spinulose, with conspicuous undulate furrows, and with pouchlike receptacles much larger.

TYPE.—Male, U.S. National Museum, USNM 67616, genitalia slide HWC 6013.

TYPE-LOCALITY.—Venadio, Sinaloa, Mexico.

PARATYPES.—Type-locality, 1 ♂, 3 ♀.

FOOD PLANT.—Unknown.

IN FLIGHT.—No date of collection.

REMARKS.—The slightly longer cilia and outer spur distinguish the males of *venadialis* from those of *mellinialis*. The absence of the

wedgelike accentuation of the veins at the termen in *venadialis* distinguishes its females from those of well marked specimens of *mellinialis*; if specimens are worn, the genitalia must be examined for the reliable separation of those two species.

***Loxostege labeculalis* (Hulst)**

FIGURES 58, 102, 140

Botis labeculalis Hulst, 1886, Trans. American Ent. Soc., vol. 13, p. 152.
Loxostege labeculalis (Hulst).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 384.—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 132.—McDunnough, 1939, Southern California Acad. Sci. Mem., vol. 2, no. 1, p. 13.

MALE.—Alar expanse 16–20 mm. Conical production of frons obsolescent or absent. Antenna weakly ciliate. Midtibia weakly incrassate; hair-pencil weak. Outer spur one-fourth as long as inner spur. Head, thorax, and abdomen ochreous. Ground color of wings pale ochreous, markings dark brown with reddish tinge.

Genitalia (fig. 58): Uncus triangulate, apex pointed, slightly blunt. Harpe rather narrow, with digitate setae, clasper short, stout, curved, spinulate distally; sacculus with conspicuous upturned slender spine arising from dorsal margin. Anellus stout. Aedeagus with subequal bifurcate sclerotization and patch of deciduous spines. Large element of bifurcation elongate, somewhat concave, dilated distally; small element a short, spurlike projection from near base of larger.

FEMALE (fig. 140).—Alar expanse 20–23 mm. Color and maculation as in male. Genitalia (fig. 102): ostial pouch large, width about equal to depth; ductus bursae extending beyond anterior margin of pouch.

TYPE.—Female, American Museum of Natural History.

TYPE-LOCALITY.—Arizona.

FOOD PLANT.—Unknown.

DISTRIBUTION.—Arizona: Cochise Co.: Palmerlee, Paradise; Huachuca Mts., Chiricahua Mts.; Pima Co.: Baboquivari Mts. (Carr Canyon, Pepper Sauce Canyon); Santa Rita Mts., Madera Canyon. Texas: Brewster Co.

SPECIMENS EXAMINED.—39.

IN FLIGHT.—July to September.

REMARKS.—The spurlike projection of the aedeagus varies from obsolescent to well developed, and the serration of the margins of the larger element ranges from nearly smooth to distinctly serrate. The ostial pouch is also somewhat variable in shape, particularly adjacent to the origin of the ductus seminalis.

Loxostege intinctalis (Dyar), new combination

FIGURE 141

Pachyzancla intinctalis Dyar, 1920, Insec. Insc. Menstr., vol. 8, p. 34.

MALE (fig. 141).—Alar expanse 21 mm. Conical production of frons obsolescent or absent. Antenna weakly ciliate. Midtibia incrassate, hair-pencil distinct. Color and maculation as in *labeculalis* but with brownish accentuation of veins at termen more wedgelike. Genitalia like those of *labeculalis* but with uncus broader.

FEMALE.—Alar expanse 20 mm. Similar to male in color and maculation. Genitalia similar to those of *labeculalis* but larger, with ductus bursae wider and ostial pouch somewhat differently shaped.

TYPE.—Male, U.S. National Museum, USNM 22762, genitalia slide HWC 17,241.

TYPE-LOCALITY.—Zacualpan, Mexico.

PARATYPE.—Female, U.S. National Museum, Guadalajara, Mexico, via Schaus collection, genitalia slide HWC 17,242.

FOOD PLANT.—Unknown.

REMARKS.—*L. intinctalis* is known only from the type and paratype, so the differences distinguishing them from specimens of *labeculalis* may be individual rather than of specific value. Until this can be determined by examination of additional material of *intinctalis*, however, it seems best to treat it as a distinct species.

Loxostege federalis, new species

FIGURES 60, 103, 148

MALE (fig. 148).—Alar expanse 22–24 mm. Frons round. Antenna ciliate, length of cilia about equal to width of shaft. Midtibia weakly incrassate; hair-pencil obsolescent or absent. Outer spur about one-third as long as inner. Ground color of wings straw yellow, markings brownish.

Genitalia (fig. 60) similar to those of *labeculalis* but with uncus longer and more extenuate distally.

FEMALE.—Alar expanse 23 mm. Similar to male in color and maculation. Genitalia (fig. 103) similar to those of *labeculalis* but with posterior apophyses longer and a conspicuous constriction of eighth sternum adjacent to ostial opening.

TYPE.—Male, U.S. National Museum, USNM 67623, genitalia slide HWC 10,005.

TYPE-LOCALITY.—Popocatepetl Park, Mexico, D.F.

PARATYPES.—Type locality, 3 ♂, 2 ♀; in collection of U.S. National Museum.

FOOD PLANT.—Unknown.

IN FLIGHT.—June and July.

***Loxostege entephrialis* (Schaus), new combination**

FIGURES 29, 147

Pyrausta entephrialis Schaus, 1912, Ann. Mag. Nat. Hist., ser. 8, vol. 9, p. 311.

MALE (fig. 147).—Alar expanse 25 mm. Frons conical. Antenna ciliate, cilia slightly longer than width of shaft. Midtibia weakly incrassate; hair-pencil obsolescent or absent. Wings: ground color sordid white with an ochreous tinge; irrorated with light brown; markings brownish fuscous.

Genitalia (fig. 29): Uncus about as broad as long. Harpe with digitate setae; pad folded, spinulation dense and fine; a conspicuous broad, concave, spurlike projection arising from near middle of harpe and extending below lower margin; sacculus with small distal triangulate production on dorsal margin. Aedeagus with patch of slender, spinelike cornuti and small finlike basal keel.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 17596, genitalia slide HWC 7952.

TYPE-LOCALITY.—Juan Vinas, Costa Rica.

FOOD PLANT.—Unknown.

IN FLIGHT.—October.

REMARKS.—*L. entephrialis* is known only from the type.

***Loxostege cupreicostalis* (Dyar), new combination**

FIGURES 60, 104, 142

Phlyctaenodes cupreicostalis Dyar, 1913, Proc. U.S. Nat. Mus., vol. 44, no. 1951, p. 318.

MALE (fig. 142).—Alar expanse 21–27 mm. Conical production of frons obsolescent or absent. Antenna somewhat pubescent, cilia very short. Midtibia incrassate, hair-pencil well developed, white. Wings pale yellow, somewhat lustrous and subhyaline, markings brownish; subterminal line absent.

Genitalia (fig. 60): Harpe without digitate setae; pad somewhat modified, with distal cluster of rather strong spinules; dorsal margin of sacculus with a short spinelike projection adjacent to emargination, near middle. Aedeagus with a patch of deciduous spinelike cornuti, spinules strongly dilated basally.

FEMALE.—Alar expanse 25 mm. Similar to male in color and the maculation. Genitalia (fig. 104): the character of sclerotization of the ductus bursae from ostium to origin of the ductus seminalis, in combination with the conspicuously narrow, elongate elements of signum, is diagnostic.

LECTOTYPE.—Male, U.S. National Museum, USNM 14449, genitalia slide HWC 6009.

TYPE-LOCALITY.—Guadajalara, Jalisco, Mexico.

PARALECTOTYPE.—Female, U.S. National Museum, genitalia slide HWC 6010.

FOOD PLANT.—Unknown.

DISTRIBUTION.—MEXICO: Guerrero: Sierra de Guerrero; Iguala. Puebla: Tehuacan. Jalisco: Guadalajara. Chiapas: Soconusco. Sonora: Mainari. VENEZUELA: Aroa. UNITED STATES: Arizona: Baboquivari Mts. [new record for the United States].

SPECIMENS EXAMINED.—9.

IN FLIGHT.—May to October.

REMARKS.—According to the original description, the species was based on two cotypes, a male and a female. The male, labeled type in Dyar's script, and the female are hereby designated lectotype and paralectotype, respectively.

Although *cupreicostalis* may eventually require placement elsewhere, it is best placed in *Loxostege* pending a revision of the subfamily.

Loxostege subcostalis (Dyar), new combination

FIGURE 149

Lygropia subcostalis Dyar, 1912, Proc. U.S. Nat. Mus., vol. 42, no. 1885, p. 104. —Klima, 1939, *in* Junk, Lepidopterorum catalogus, pt. 94, p. 233.

MALE (fig. 149).—Alar expanse 15–18 mm. Frons conical. Antenna weakly ciliate, somewhat pubescent, black with tip white. Midtibia weakly incrassate; hair-pencil obsolescent or absent. Outer spur one-half as long as inner spur. Upper surface of wings brownish yellow, unicolorous; under surface as above, except costa of forewing margined with black. Labial palpus with first and second segments brownish yellow; third segment black. Fore-, mid-, and hindtarsi blackish fuscous.

Genitalia similar to those of the species treated next but with the aedeagus of *subcostalis* lacking the conspicuous, strong, rather long, hooklike distal cornutus.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 14208, genitalia slide HWC 7995.

TYPE-LOCALITY.—Orizaba, Mexico.

FOOD PLANT.—Unknown.

DISTRIBUTION.—MEXICO: Vera Cruz: Orizaba and Santa Tosa. GUATEMALA: Chejel. COSTA RICA: Avangarez. UNITED STATES: Texas: Dallas [new record for the United States].

SPECIMENS EXAMINED.—8.

IN FLIGHT.—May to August.

REMARKS.—The Texas specimen is labeled "*Botis obauratalis*

Hulst, Type," but this appears to be a manuscript name since no record of its description was found in the literature.

Dyar erred in referring to the tibiae and tarsi as black; only the tarsi are blackish. The tibiae are brownish yellow.

***Loxostege sinaloensis*, new species**

FIGURES 13, 150

MALE (fig. 150).—Alar expanse 15–17 mm. Frons conical. Antenna weakly ciliate, somewhat pubescent, brownish yellow with tip white. Midtibia weakly incrassate; hair-pencil obsolescent or absent. Outer spur one-half as long as inner spur. Upper surface of wings brownish yellow, unicolorous; under surface same as upper, except costa of forewing narrowly margined with black. Labial palpus with all segments brownish yellow. Entire foretarsus fuscous; first segment of mid- and hind tarsi pale fuscous, remainder of segments brownish yellow.

Genitalia (fig. 13): Uncus bluntly pointed. Harpe without digitate setae; clasper bifid. Aedeagus with one large, conspicuous, hooklike distal cornutus and a few patches of small, slender spines; basal keel well developed.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 67617, genitalia slide HWC 7997.

TYPE-LOCALITY.—Venadio, Sinaloa, Mexico.

PARATYPES.—Type locality, 4 ♂.

FOOD PLANT.—Unknown.

REMARKS.—*L. sinaloensis* and *subcostalis* are closely related; but the differences in coloration of the antenna, third segment of the labial palpus, and tarsi readily distinguish them from each other. The genitalia of both *sinaloensis* and *subcostalis* resemble those of *helvialis* and *pseudohelvialis*, but the former two species have stouter bifid claspers of the harpe and a different aedeagal armature.

***Loxostege chiapasalis*, new species**

FIGURES 34, 151

MALE (fig. 151).—Alar expanse 22 mm. Frons conical. Antenna ciliate, cilia slightly shorter than width of shaft. Midtibia incrassate; hair-pencil present. Outer spur minute, about one-eighth as long as inner spur. Head, thorax, and abdomen brownish yellow; frons margined with white; thorax and abdomen paler below. Upper and under surfaces of fore- and hindwings brownish yellow, without markings. Labial palpus: first segment with basal half white, remainder blackish above, fringe fuscous intermixed with white; second

segment blackish above and laterally, fringe white; third segment blackish. Inner surface of foretibia fuscous, outer surface pale ochreous. Midtibia with a brownish dorsal band, remainder ochreous; hind tibia ochreous. All tarsi pale, smoky fuscous.

Genitalia (fig. 34): Uncus stout. Harpe with digitate setae; pad bifurcate distally, the elements subequal; a crenulate production anterior to median angle of bifurcation; spinulation restricted to area below crenulate production; sacculus with two widely separated spines. Aedeagus without cornuti.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 67618, genitalia slide HWC 17,092.

TYPE-LOCALITY.—Chiapas, Mexico.

FOOD PLANT.—Unknown.

REMARKS.—The species, known only from the type, resembles *Psara nigripes* Schaus, but *chiapasalis* is smaller and somewhat more brownish yellow, and the midtibia is brownish fuscous dorsally. The genitalia of *chiapasalis* are similar to those of *cayugalis*, differing chiefly in the modification of the pad.

***Loxostege nigripes* (Schaus), new combination**

FIGURES 32, 68, 152

Psara nigripes Schaus, 1920, Proc. Ent. Soc. Washington, vol. 22, p. 190.

MALE (fig. 152).—Alar expanse 28–30 mm. Frons conical. Antenna ciliate, cilia one-half as long as width of shaft. Midtibia incrassate, hair-pencil weak. Outer spur one-fifth as long as inner spur. Wings above and below orange, without markings. Labial palpus: first segment whitish at base, remainder fuscous; dorsal half of second segment fuscous, remainder whitish; third segment fuscous. Foretibia with some fuscous, more extensive on inner side; mid- and hind tibia orange. All tarsi blackish.

Genitalia (fig. 32): Uncus stout. Harpe with digitate setae; pad moderately narrow, spinulation rather coarse; a conspicuous spine arising from sacculus, with distal portion bent horizontally. Aedeagus without cornutus.

FEMALE.—Alar expanse 27–30 mm. Similar to male in color and maculation. Genitalia (fig. 68): ostium rather broad; ductus bursae gradually tapered from ostium to constriction adjacent to origin of ductus seminalis.

TYPE.—Male, U.S. National Museum, USNM 23552, genitalia slide HWC 17,090.

TYPE-LOCALITY.—"Cayuga, Guatemala"?

FOOD PLANT.—Unknown.

DISTRIBUTION.—GUATEMALA: Volcan Santa Maria. MEXICO: Vera

CRUZ: Jalapa, Orizaba; CHIAPAS: Soconusco.

SPECIMENS EXAMINED.—14.

IN FLIGHT.—June to October.

REMARKS.—Schaus cited only Cayuga, Guatemala as habitat for the species, but none of the material in the collection is labeled Cayuga. The type and all of the other specimens in the series from Guatemala are labeled Volcan Santa Maria.

***Loxostege subcuprea* (Dognin), new combination**

FIGURES 61, 174

Lygropia subcuprea Dognin, 1906, Ann. Mag. Ent. Belgique, vol. 50, p. 121.—Klima, 1939, *in* Junk, Lepidopterorum catalogus, pt. 94, p. 233.

MALE (fig. 174).—Alar expanse 20 mm. Frons conical. Antenna somewhat pubescent. Midtibia incrassate; hair-pencil weak. Outer spur slightly less than one-third as long as inner spur. Fore- and hindwings orange, without markings except for fuscous margins. Labial palpus: first segment and most of second segment orange; distal part of second and all of third segment pale fuscous.

Genitalia (fig. 61): Uncus pointed. Harpe without digitate setae; clasper strong, hooklike, arising from near middle of harpe; dorsal margin of sacculus with a cluster of coarse, slender spinules near base and a distal group of finer spinules. Aedeagus with a narrow, straplike ventral sclerotization and a distal group of slender spines; basal keel thin, finlike.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 29562, genitalia slide HWC 17,237.

TYPE-LOCALITY.—Metan, Salta, Argentina.

FOOD PLANT.—Unknown.

DISTRIBUTION.—ARGENTINA: Type-locality and Tucuman.

SPECIMENS EXAMINED.—3.

IN FLIGHT.—February.

REMARKS.—The species is definitely not congeneric with *Lygropia unicoloralis* (Guenée), type of the genus *Lygropia* Lederer.

***Loxostege clarissalis* (Schaus), new combination**

FIGURE 176

Nomophila clarissalis Schaus, 1920, Proc. Ent. Soc. Washington, vol. 22, no. 8, p. 217.—Klima, 1939, *in* Junk, Lepidopterorum catalogus, pt. 94, p. 382.

MALE (fig. 176).—Alar expanse 24 mm. Frons conical. Antenna weakly ciliate. Midtibia incrassate; hair-pencil well developed. Outer spur slightly less than one-half as long as inner spur. Head, thorax, and abdomen pale fuscous; patagia pale orange. Forewing ground color fuscous with orange tinge; orange accentuation of veins

terminating before attaining termen. Hindwing orange, margined with fuscous.

Genitalia very similar to those of *subcuprea* but larger and with uncus somewhat longer and more slender.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 23822, genitalia slide HWC 17,239.

TYPE-LOCALITY.—Peru.

FOOD PLANT.—Unknown.

DISTRIBUTION.—Peru.

SPECIMENS EXAMINED.—2.

REMARKS.—The frons, venation, genitalia, and tibial characters of *clarissalis* exclude it from the genus *Nomophila*.

***Loxostege aemulalis* (Dognin), new combination**

FIGURE 171

Phlyctaenodes aemulalis Dognin, 1905, Ann. Ent. Soc. Belgique, vol. 49, p. 77.

MALE (fig. 171).—Alar expanse 23 mm. Frons conical. Antenna weakly ciliate, cilia about one-half as long as width of shaft. Midtibia incrassate; hair-pencil present. Outer spur one-third as long as inner spur. Forewing smoky fuscous, without markings. Hindwing ochreous orange with smoky fuscous border on costa and outer margin. Genitalia essentially like those of *clarissalis* but with uncus narrower and more attenuate.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 29584, genitalia slide HWC 7949.

TYPE-LOCALITY.—Charuplaya, Bolivia.

FOOD PLANT.—Unknown.

SPECIMENS EXAMINED.—1 (known only from the type).

IN FLIGHT.—June.

REMARKS.—Although the genitalia of *aemulalis* and *clarissalis* are very similar, the lack of orange accentuation of the forewing veins of *aemulalis* readily distinguishes it from *clarissalis*.

***Loxostege naranjalis* (Schaus), new combination**

FIGURE 173

Lygropia naranjalis Schaus, 1920, Proc. Ent. Soc. Washington, vol. 22, no. 8, p. 213.—Klima, 1939, *in* Junk, Lepidopterorum catalogus, pt. 94, p. 232.

FEMALE (fig. 173).—Alar expanse 23 mm. Frons conical. Antenna pubescent. Head fuscous, frons margined with orange. Collar, thorax, and patagia orange. Abdomen orange with a black dorsal stripe from second to anal segment. Fore- and hindwings orange, margins black.

Genitalia with ostium broad; ductus bursae long, coiled, with a collarlike sclerotization near origin of ductus seminalis; bursa copulatrix somewhat granulose.

MALE.—Unknown.

TYPE.—Female, U.S. National Museum, USNM 23810, genitalia slide HWC 17,240.

TYPE-LOCALITY.—São Paulo, Brazil.

FOOD PLANT.—Unknown.

REMARKS.—*L. naranjalis* is known only from the type, and without the male, its generic placement is somewhat uncertain; however, its affinity with *Lygropia* is remote and, although the signum lacks the carina of typical *Loxostege*, its other characters indicate close relationship to that genus.

***Loxostege mojavealis*, new species**

FIGURES 172, 175

FEMALE (fig. 172).—Alar expanse 22 mm. Frons conical. Antenna simple. Forewing: ground color of upper surface whitish, strongly irrorated with smoky fuscous, markings blackish; definition of transverse anterior and posterior lines rather weak, with that of the latter strongest; area between transverse anterior line and base of wing paler than that between transverse anterior and posterior lines; angulation of transverse posterior line sharp and acute on vein 2. Hindwing yellowish orange, postmedial and subterminal lines fuscous, weak but discernible; terminal line black, thin; fringe blackish. Genitalia somewhat similar to those of *nigripes* but with lateral margins of ductus bursae at ostium straplike, ductus bursae with a conspicuous, narrow sclerotization below origin of ductus seminalis.

MALE.—Unknown.

TYPE.—Female, U.S. National Museum, USNM 67619, genitalia slide HWC 8027.

TYPE-LOCALITY.—Mojave Desert, near Phelan, Calif.

FOOD PLANT.—Unknown.

IN FLIGHT.—April.

REMARKS.—The species is known only from the type. Although *mojavealis* is somewhat similar to *Loxostege annaphilalis* (Grote), of which no females were available for study, it does not seem likely that they are conspecific, since the wings of *mojavealis* are narrower than those of *annaphilalis* and the markings different on both the fore- and hindwing. Definition of the markings is sharper on the forewing of *mojavealis*, with the transverse posterior line much more angulate and acute on vein 2 than in *annaphilalis*. The hindwing of *annaphilalis* is without markings except for the terminal dots and fringe.

Loxostege fuscivenalis (Schaus), new combination

FIGURE 177

Lygropia fuscivenalis Schaus, 1920, Proc. Ent. Soc. Washington, vol. 22, no. 8, p. 213.—Klima, 1939, *in* Junk, Lepidopterorum catalogus, pt. 94, p. 233.

MALE (fig. 177).—Alar expanse 23 mm. Frons conical. Antenna somewhat pubescent, cilia very short. Outer spur one-third as long as inner spur. Head and collar orange; patagia orange anteriorly, fuscous posteriorly; abdomen fuscous. Forewing dull grayish brown, without markings except for brownish fuscous accentuation of veins. Hindwing brownish fuscous, accentuation of veins black. Labial palpus: first segment orange; upper half and distal portion of second segment fuscous, remainder orange; third segment fuscous.

Genitalia similar to those of the species treated next but with vinculum narrower and anterior production longer.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 23811, genitalia slide HWC 17,305.

TYPE-LOCALITY.—Peru.

FOOD PLANT.—Unknown.

DISTRIBUTION.—Peru.

SPECIMENS EXAMINED.—2.

REMARKS.—*L. fuscivenalis* is definitely misplaced in *Lygropia* and its affinity to this group is remote. Although the genitalia of *fuscivenalis* are somewhat aberrant, all other characters indicate that it is closely related to *Loxostege*.

Loxostege peruensis, new species

FIGURE 178

MALE (fig. 178).—Alar expanse 24 mm. Frons conical. Antenna somewhat pubescent, cilia very short. Outer spur one-third as long as inner spur. Head, collar, palpi, and abdomen entirely fuscous. Fore- and hindwings as in *fuscivenalis*.

Genitalia: Uncus short, broad at base, distal termination a sharp point. Harpe without digitate setae; two slender fingerlike projections dorsad of outer end of sacculus, one directed dorsad, the other ventrad; sacculus with a conspicuous medial production bearing a cluster of strong spines. Aedeagus with two subequal sclerotizations; the long one narrow, straplike, with distal termination a long, slender, curved hook, the other short, bluntly pointed distally.

FEMALE.—Unknown.

TYPE.—Male, U.S. National Museum, USNM 67620, genitalia slide HWC 17,306.

TYPE-LOCALITY.—Peru.

FOOD PLANT.—Unknown.

REMARKS.—The species is known only from the type and is distinguished from *fuscivenalis* by its fuscous head, collar, and palpi. Because the genitalia of *peruensis* and *fuscivenalis* are so similar, the former may eventually prove to be a Mendelian color variant of the latter; but until its status can be definitely determined, it is desirable that a name be available for it.

Loxostege rantalis (Guenée)

FIGURES 51, 94, 153, 154

Nymphula rantalis Guenée, 1854, *in* Boisduval and Guenée, Histoire naturelle des insectes: Species général des lépidoptères, vol. 8, p. 405.—Hampson, 1899, Proc. Zool. Soc. London, p. 210 [cited as synonym of *Phlyctaenodes similalis* (Guenée) in error].

Eurycreon rantalis (Möschler).—von Hedemann, 1894, Stettiner Ent. Zeit., vol. 55, p. 286. [Incorrect citation.]

Loxostege similalis var. *rantalis* (Guenée).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 383.

Loxostege similalis form *rantalis* (Guenée).—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 132.—McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, no. 1, p. 12.

Loxostege similalis of authors.—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 383.—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 132.—Forbes, 1920, Cornell Univ. Agric. Exp. Sta. Mem. 68, p. 556.—McDunnough, 1939, Southern California Acad. Sci. Mem., vol. 2, no. 1, p. 12.—Schaus, 1940, Scientific survey of Porto Rico and the Virgin Islands, vol. 12, pt. 3, p. 367.—Smith and Franklin, 1954, Kansas Ent. Soc. Journ., vol. 27, no. 1, p. 27.—Okumura [in part], 1961, California Dept. Agric. Spec. Publ., no. 282, p. 48. [Misidentification.]

Phlyctaenodes similalis of authors.—Hampson [in part], 1899, Proc. Zool. Soc. London, p. 210. [Misidentification.]

Phlyctaenodes similalis of authors.—Wolcott, 1923, Journ. Dept. Agric. Puerto Rico, vol. 7, p. 192; 1936, Journ. Agric. Univ. Puerto Rico, vol. 20, p. 466. [Misidentification.]

Botis siriusalis Walker, 1859, List of the lepidopterous insects in the British Museum (Nat. Hist.), pt. 18, p. 563.

Botis licealis Walker, 1859, ibid., p. 563.

Ebulea murcialis Walker, 1859, ibid., p. 746.

Scopula nestusalis Walker, 1859, ibid., p. 784.

Scopula diotimealis Walker, 1859, ibid., p. 785.

Scopula crinisalis Walker, 1859, ibid., p. 798.

Nephopteryx intractella Walker, 1863, ibid., pt. 27, p. 55.

Eurycreon crinitalis (Walker).—Lederer, 1863, Weiner Ent. Monat., vol. 7, p. 376 [invalid emendation].—von Hedemann, 1894, Stettiner Ent. Zeit., vol. 55, p. 286.

Botys posticata Grote and Robinson, 1867, Trans. American Ent. Soc., vol. 1, p. 22.

Botys subfulvalis Herrich-Schäffer, 1871, Corr.-Blatt. Zool. Min. Ges. Regensburg, vol. 25, p. 20.

Eurycreon communis Grote, 1876, Canadian Ent., vol. 8, p. 99.

Eurycreon collucidalis Möschler, 1890, Abh. Senck. Ges., 16, p. 290.—Gundlach, 1891, Ann. Soc. Española Hist. Nat., vol. 20, p. 248.

Phlyctaenodes collucidalis (Möschler).—Wolcott, 1923, Journ. Dept. Agric. Puerto Rico, vol. 7, p. 192; 1936, Journ. Agric. Univ. Puerto Rico, vol. 20, p. 466.

Pyrausta caffreii Flint and Malloch, 1920, Bull. Illinois Dept. Reg. Educ. (Nat. Hist. Surv.), vol. 13, art. 10, pp. 304.

Loxostege caffreii (Flint and Malloch).—Heinrich [in part,] 1921, Ent. News, vol. 32, p. 57.

MALE (fig. 153).—Alar expanse 17–22 mm. Frons conical. Antenna pubescent. Midtibia little, if any, incrassate; hair-pencil absent. Outer spur one-half as long as inner spur. Forewing: ground color dull ochreous or somewhat brownish with markings slightly darker; transverse anterior line rather smooth, irregularly angulated; transverse posterior line denticulate; both lines often weak, diffuse; discocellular patch conspicuous, discal dot weaker. Hindwing often paler than forewing; postmedial line, if evident, diffuse.

Genitalia (fig. 51): Uncus narrowing gradually from base to tip. Harpe with cluster of setae arising from ridgelike modification, long, slender, nondigitate; pad somewhat modified, downcurved, hooklike, spinulate; dorsal margin of sacculus with three conspicuous spines; ventral spine of basal pair distinctly more than half as long as dorsal; dorsal spine upright from base for about one-third its length, thence somewhat outwardly oblique and weakly undulate; outer spine approximately parallel to dorsal margin of sacculus and terminating near middle. Aedeagus with a spinulate, irregular, elongate patch.

FEMALE (fig. 154).—Alar expanse 17–43 mm. Coloration usually somewhat darker than that of male, more brownish or occasionally somewhat grayish fuscous, markings stronger. Genitalia (fig. 94) with sclerotization of ductus bursae broadly interrupted between ostium and collarlike structure; lateral margins of sclerotized portion of ductus bursae between ostium and collar-like structure parallel or turning but slightly inward adjacent to ostium; an elongate, spinulate sclerotization on dorsum of ductus bursae midway between collar and ostium. Two signa, subequal; the small one connate, spinulate.

LARVA (fig. 1).—Mature, 24 mm. long. Head sordid white with reticulate pale amber markings and a small fuscous patch at lateral incision of hind margin. Prothoracic shield sordid white with brownish or blackish markings; elongate, or a series of small spots on dorsum and a narrow, interrupted pigmentation posterior to seta 1b, suffusion present along lateral margin; posterolateral margin extenuated, passing behind and under spiracle and fusing with prespiracular shield. Pinacula brown or blackish. Pinacula above level of spiracles uniformly concolorous, or with but a small area at base of seta paler; those below level of spiracles with a reduction or absence of pigmenta-

tion in central area much larger, often appearing ringlike. Meso- and metathorax with pinacula of setae Ia–Ib and IIa–IIb longitudinally elongate. Abdominal segments 1–8 with pinacula of setae I and II large, flat, round; pinaculum of seta III somewhat elongate or triangular. Abdominal segment 9 with pinaculum bearing paired setae II, that of setae I–III strongly pigmented; setae VI, VII, and VIII also on well-defined pinacula but with central areas paler.

TYPES.—U.S. National Museum: *rantalis*, female, USNM 67625, genitalia slide HWC 17,401. British Museum (Nat Hist.): *siriusalis*, male with head and abdomen missing; *lycealis*, male, genitalia slide BM 9683; *murcialis*, female, genitalia slide BM 9680; *nestusalis*, male with abdomen missing; *diotimealis*, female, genitalia slide BM 9679, hereby designated lectotype; *crinisalis*, male, genitalia slide BM 9681, hereby designated lectotype; *intractella*, male, genitalia slide BM 9678; *communis*, male, genitalia slide BM 9682, hereby designated lectotype. Museum der Humboldt-Universität: *collucidalis*, male, genitalia slide HWC 17,636. American Museum Natural History: *posticata*, male, lectotype. Illinois Natural History Survey Collection: *caffreii*, male. Location unknown: *subfulvalis*.

TYPE-LOCALITIES.—Probably "Amerique Septentrionale, Am. bor.," or, "Cuba": *rantalis*. United States: *siriusalis, licealis, nestusalis*, and *intractella*. New York: *communis*. Pennsylvania: *posticata*. Illinois: *caffreii*. Santo Domingo: *murcialis, diotimealis*. Puerto Rico: *collucidalis*. Unknown: *crinisalis, subfulvalis*.

FOOD PLANTS.—Alfalfa, *Ambrosia trifida, A. artemisiifolia retroflexus, Amaranthus* sp., *Atriplex patula, Batis maritima*, beans, clover, corn, cotton, cowpeas, lambsquarters, *Parthenium argentatum*, peas, pigweed, radish, ragweed, *Rumex* spp., smartweed, soybeans, strawberry, sugarbeets, sunflower, Swiss chard, and thistle.

DISTRIBUTION.—UNITED STATES: Maine, Connecticut, New York, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana, Arkansas, Texas, Ohio, Indiana, Illinois, Missouri, Iowa, Kansas, Oklahoma, Colorado, New Mexico, Arizona, and California. WEST INDIES: Bermuda, Bahamas, Cuba, Puerto Rico, St. Croix, and St. Domingo. MEXICO: Vera Cruz, Puebla, Oaxaca, and Jalisco.

SPECIMENS EXAMINED.—335.

IN FLIGHT.—April to November.

REMARKS.—After examining over one hundred genitalia dissections, I believe that the origins cited by Guenée for *rantalis* (Montevideo) and *similalis* (Amèrique Septentrionale) were confused. The genitalia of the type of *rantalis*, a female, are unlike any of those of South American specimens but typical of material from North America, Mexico, and the West Indies. Similarly, the genitalia of the type of

similalis, a male, are unlike those of North American, Mexican, and West Indies material but are like those of South American specimens, some of which were collected at Montevideo, Uruguay.

Furthermore, "Amerique Septentrionale" does not appear on the type label of *similalis*; the only localities on it are "Am. bor. Cuba." A line appears to have been drawn through "Cuba" indicating cancellation.

I am much indebted to Mr. Whalley for examining, dissecting, and furnishing data on the type material in the British Museum essential for verification of synonymy and selection of lectotypes. The types of *siriusalis* and *intractella* were found to be males, not females as indicated by Walker, and *Scopula thoonalis* Walker proved to be not congeneric with *Loxostege*. *S. thoonalis* is, therefore, removed from the synonymy but, owing to lack of genitalia, it cannot be assigned elsewhere at present.

I am also indebted to Dr. H. J. Hannemann of the Humboldt-Universität Museum for making available the type of *collucidalis* for dissection and verification of its synonymy.

Loxostege occidentalis (Packard)

FIGURES 52, 96, 155, 156

Scopula occidentalis Packard, 1873, Ann. Lyc. Nat. Hist. New York, vol. 10, p. 260.

Eurycreon occidentalis (Packard).—Hampson, 1899, Proc. Zool. Soc. London, p. 210 [cited as a synonym of *Phlyctaenodes similalis* (Guenée) in error].

Loxostege occidentalis (Packard).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 383 (cited as synonym of *Loxostege similalis* var. *rantalis* (Guenée) in error).—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 132.—McDunnough, 1939, Southern California Acad. Sci. Mem., vol. 2, no. 1, p. 12 [cited as synonym of *Loxostege similalis* form *rantalis* (Guenée) in error].

MALE (fig. 155).—Alar expanse 18–26 mm. Frons conical. Antenna pubescent. Midtibia little, if any, thicker than the hind tibia; hair-pencil absent. Typical specimens similar to darker specimens of *rantalis* in color and maculation, those of *occidentalis* more grayish fuscous and with definition of narrow, sordid white or ochreous shading along inner side of transverse anterior and outer side of transverse posterior lines of forewing more distinct, terminal dots stronger. Examination of the genitalia, however, is necessary to reliably distinguish occasional pale brownish specimens of *occidentalis* from those of *rantalis*.

Genitalia (fig. 52) similar to those of *rantalis* but with uncus stouter and the two basal spines of sacculus stouter, subequal; ventral spine one-half or less as long as dorsal.

FEMALE (fig. 156).—Alar expanse 20–23 mm. Similar to male in color and maculation. Genitalia (fig. 96) similar to those of *rantalis*

but ductus bursae distinctly expanded at ostium and lateral margins somewhat angulate.

LECTOTYPE.—Female, Museum of Comparative Zoology, MCZ 14264, genitalia slide HWC 17,459.

TYPE-LOCALITY.—California.

FOOD PLANT.—Unknown.

DISTRIBUTION.—California: Soda Springs, Navarro, San Francisco, Claremont, San Diego, Loma Linda, Fair Oaks, Fresno, Yosemite, and Inyo Co. [no additional locality].

SPECIMENS EXAMINED —47.

IN FLIGHT.—April to October.

REMARKS.—*L. occidentalis* was based on two males and two females from California received by Packard from the collections of Edwards and Behrens. Of the three specimens (two males and one female) of *occidentalis* now in the collection of the MCZ, only the female can be definitely associated with the type series; it is labeled "*Scopula occidentalis* Packard, California, Edwards" and is hereby designated lectotype of the species. One of the males has no locality label; the other is from California, but there are no indications that either was Edwards' or Behrens' material.

Differences in the genitalia, both male and female, distinguish *occidentalis* from *rantalis* and *similalis* and clearly indicate that it is a distinct species.

The adults of *occidentalis* have not yet been associated with larvae.

Loxostege similalis (Guenée)

FIGURES 50, 95, 157, 158

Nymphula similalis Guenée, 1854, *in* Boisduval and Guenée, Histoire naturelle insecta: Species général des Lépidoptères, vol. 8, p. 403.

Phlyctaenodes similalis (Guenée).—Hampson [in part,] 1899, Proc. Zool. Soc. London, p. 210.

Tritea ferruginea Warren, 1892, Ann. Mag. Nat. Hist., ser. 6, vol. 9, p. 179. [New synonymy.]

Phlyctaenodes ferruginea (Warren).—Hampson, 1899, Proc. Zool. Soc. London, p. 210.

Pyralis garalis Schaus, 1906, Proc. U.S. Nat. Mus., vol. 30, no. 1444, p. 141. [New synonymy.]

MALE (fig. 157).—Alar expanse 17–20 mm. Frons conical. Antenna pubescent. Midtibia little, if any, incrassate; hair-pencil absent. Outer spur about one-half as long as inner spur. Resembles *rantalis* but duller in appearance, with ochreous tinge lacking; posterior transverse line of forewing usually with pale edging along outer margin.

Genitalia (fig. 50): Uncus distinctly extenuate; distal third cylindrical, hairlike scales short, one-half or less as long as proximal ones.

Harpe with basal pair of spines on dorsal margin of sacculus of equal length, or ventral spine slightly longer than dorsal.

FEMALE (fig. 158).—Alar expanse 16–20 mm. Usually somewhat darker than male but otherwise similar in color and maculation. Genitalia (fig. 95) similar to those of *rantalis* but with dorsum of ductus bursae between collarlike structure and ostium without a platelike sclerotization, or if discernible, obsolescent and nonscobinate.

TYPES.—U.S. National Museum: *similalis*, male, USNM 67628, genitalia slide HWC 7754; *garalis*, male, USNM 9624, genitalia slide HWC 10,032. British Museum (Nat. Hist.): *ferruginea*, male.

TYPE-LOCALITIES.—Probably Montevideo, Uruguay: *similalis* (see discussion under *rantalis*). Coquimbo, Chile: *ferruginea*. São Paulo, Brazil: *garalis*.

Food plant and larval stage unknown.

DISTRIBUTION.—BRAZIL: Rio Grande do Sul: Pelotas, Guarani; Mato Grosso: Corumba; Minas Gerais: Lassance; São Paulo: Rio de Janeiro, Campinas; Castro Parana. URUGUAY: Montevideo. PARAGUAY: Villarica. ARGENTINA: Santa Fe: San Cristobal; Tucuman: Tucuman, Los Vasquez; Cordoba: Pilar; Jujuy: Ledesma; La Rioja: La Rioja. CHILE: Santiago, Cajon Rio Maipo; Malleco: Angol. PERU: no additional locality. BOLIVIA: no additional locality. ECUADOR: Loja.

SPECIMENS EXAMINED.—109.

IN FLIGHT.—January to December.

REMARKS.—In addition to the differences in genitalic structures, the distributions of *similalis* and *rantalis* are different, the former being restricted to South America and the latter to the United States, Mexico, and the West Indies.

Schaus' *Pyralis garalis* agrees with *similalis* in both maculation and genitalia and is definitely conspecific. I am indebted to Mr. Whalley of the British Museum for comparing material with the type of *Tritea ferruginea*, which also agrees with *similalis* in maculation and genitalia and is doubtless conspecific.

Although *similalis* replaces *rantalis* in South America and appears to be common, it has not attracted attention as a pest there; this may be due to some confusion of its larvae with those of *Loxostege bifidalis* (Fabricius), which has been reported as a pest of considerable importance.

Loxostege bifidalis (Fabricius)

FIGURES 54, 98, 164, 165

Phalaena bifidalis Fabricius, 1794, Ent. Syst., vol. 3, pt. 2, p. 232.

Phlyctaenodes inornatalis Walker, 1865, List of the lepidopterous insects in the British Museum (Nat. Hist.), pt. 34, p. 1456.

Eurycreon evanidalis Berg, 1875, Deutsche Ent. Zeit., vol. 19, p. 134.—Gundlach, 1890, Ann. Soc. Española Hist. Nat., vol. 20, p. 348.
Eurycreon obsoletalis Berg, 1875, op. cit., p. 135.
Eurycreon evanadalis [sic] Berg.—Möschler, 1890, Abh. Senck. Ges., vol. 16, p. 290.
Eurycreon bifidalis (Fabricius).—von Hedemann, 1894, Stettiner Ent. Zeit., vol. 55, p. 286; 1896, ibid., vol. 57, p. 3.
Phlyctaenodes bifidalis (Fabricius).—Hampson, 1899, Proc. Zool. Soc. London, p. 210.—Wolcott, 1923, Journ. Dept. Agric. Puerto Rico, vol. 7, p. 192.
Loxostege bifidalis (Fabricius).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull. 52, p. 383.—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 131.—McDunnough, 1939, Southern California Acad. Sci. Mem., vol. 2, no. 1, p. 12.—Schaus, 1940, Scientific survey of Porto Rico and the Virgin Islands, vol. 12, pt. 3, p. 368.—Amsel, 1956 (1954), Bol. Ent. Venezolana, vol. 10, p. 249.
Loxostege stolidalis Schaus, 1940, Scientific survey of Porto Rico and the Virgin Islands, vol. 12, pt. 3, p. 368. [New synonymy.]

MALE (fig. 164).—Alar expanse 20–24 mm. Frons conical. Antenna pubescent. Midtibia but slightly thicker than hind tibia; hair-pencil absent. Outer spur one-half as long as inner spur. Forewing: ground color pale buff, somewhat glossy; markings brownish, obsolescent, diffuse. Hindwing slightly paler than forewing, without markings except for thin terminal line. Fringe of both fore- and hindwings pale buff.

Genitalia (fig. 54): Uncus terminating in a sharp point. Harpe with cluster of strong, slender, nondigitate setae from oblique modification; hooklike sclerotization spinulate distally; production of dorsal margin of sacculus truncate. Aedeagus with numerous strong, spinelike cornuti, variable in number and shape.

FEMALE (fig. 165).—Alar expanse 20–23 mm. Similar to male in color and maculation but with the markings stronger and often more fuscous. Genitalia (fig. 98): ostial margins membranous; ductus bursae strongly sclerotized from slightly below ostium to slightly beyond midpoint between ostium and origin of ductus seminalis, somewhat constricted near middle, with upper element spinulate, lower element smooth, broad, collarlike; ductus bursae membranous, nonpigmented from collar to origin of ductus seminalis; ductus seminalis strongly sclerotized and curved, hooklike at origin.

LARVA.—Mature, 24–27 mm. long. Resembles *rantalis* but differs from it as follows: posterolateral extension of prothoracic shield behind and under spiracle, and fusion with prespiracular shield weaker, usually discernible only in specimens treated with KOH. Pigmentation of pinacula weaker, interrupted. Meso- and metathorax: pigmentation of pinaculum of setae Ia–Ib weak, restricted to a small patch anterior to base of setae or occasionally with an additional

posterior patch; pinaculum of setae IIa–IIb with pigmentation stronger and more extensive, restricted to lower portion of pinaculum, crescent shaped; pinacula of setae III, IV–V, and VI nonpigmented or pigmented at margin only. Abdominal segments 1–7: pigmentation of pinaculum of setae I similar to that of setae IA–IB of meso- and metathorax; pigmentation of pinaculum of seta II stronger than that of seta I, constricted at middle; pigmentation of seta II similar to that of setae IIa–IIb of meso- and metathorax; pinacula below level of spiracle with pigmentation restricted to marginal area or absent. Abdominal segment 8: pigmentation of pinacula of setae I and II more extensive than on anterior segments, usually not interrupted on margins but with large central area not pigmented; pinaculum of seta III complete, except for small area at base of seta. Abdominal segment 9: pigmentation of pinaculum of paired setae II stronger on anterior and lateral margins, central area and posterior margin with pigmentation obsolescent or absent; pinaculum of setae I–III with pigmentation complete, except for small area at base of setae; pinacula of setae VI, VII and VIII nonpigmented. Anal shield with pigmentation of pattern variable.

TYPES.—Location uncertain: *bifidalis*. British Museum (Nat. Hist.): *inornatalis*. Museum Natural Sciences Argentina: *evanidalis*, *obsoletalis*. U.S. National Museum: *stolidalis*, USNM 34632.

TYPE-LOCALITIES.—"Americae Insulis," *bifidalis*. St. Domingo: *inornatalis*. Argentina, Buenos Aires: *evanidalis*, *obsoletalis*. Puerto Rico, Ensenada: *stolidalis*.

FOOD PLANTS.—Cotton, purslane.

DISTRIBUTION.—CANADA: Alberta. UNITED STATES: Arizona, New Mexico, Texas. MEXICO: Colima, Oaxaca, Vera Cruz, Morelos. GUATEMALA: Cayuga. PANAMA: La Chorrera. VENEZUELA: Aroa. COLOMBIA: Tolima. PERU: Lima. BRAZIL: Rio Gran do Sul. ARGENTINA: Santa Fe, Tucuman. PARAGUAY: Villarica. WEST INDIES: St. Croix, Jamaica, Puerto Rico.

SPECIMENS EXAMINED.—179.

IN FLIGHT.—February to December.

REMARKS.—The inwardly oblique brownish or somewhat fuscous diffuse bandlike marking which extends from the apex of the forewing to the outer angle of the cell, thence fused with the posterior transverse line to the inner margin of the wing, distinguishes *bifidalis* from the other species heretofore treated herein; it is usually weaker in the males, and is often obsolescent but with remnants discernible.

The genitalia of *stolidalis* Schaus were dissected and they are within the range of interspecific variation of *bifidalis*.

***Loxostege brasiliensis*, new species**

FIGURES 55, 99, 166, 167

MALE (fig. 166).—Alar expanse 22 mm. Frons conical. Antenna pubescent. Midtibia slightly more incrassate than hind tibia; hair-pencil obsolescent or absent. Outer spur about one-third as long as inner spur. Resembles *bifidalis* but somewhat darker, definition of markings of forewing stronger, and fuscous suffusion adjacent to outer margin of hindwing more extensive.

Genitalia (fig. 55): Similar to those of *bifidalis* but with uncus stouter and lateral margins more convex; sacculus without a somewhat extenuate, truncate production from dorsal margin.

FEMALE (fig. 167).—Alar expanse 22 mm. Similar to male in color and maculation but with markings stronger. Genitalia (fig. 99) similar to those of *bifidalis* but collarlike structure narrower, with dorsal and ventral margins parallel.

TYPE.—Male, U.S. National Museum, USNM 67621, genitalia slide HWC 8022.

TYPE LOCALITY.—Campinas, São Paulo, Brazil.

PARATYPES.—From type locality 2 ♀, genitalia slide HWC 8023, in U.S. National Museum.

FOOD PLANT.—Unknown.

IN FLIGHT.—December.

***Loxostege pluralis*, new species**

FIGURES 57, 100, 168, 169

MALE (fig. 168).—Alar expanse 21 mm. Frons conical. Antenna pubescent. Midtibia slightly more incrassate than hind tibia; hair-pencil absent or obsolescent. Outer spur about one-third as long as inner spur. Similar to *brasiliensis* in color and maculation but forewing with veins accentuated with fuscous, hindwing with less suffusion adjacent to outer margin.

Genitalia (fig. 57): Similar to those of *brasiliensis* but with uncus somewhat extenuate from near middle to apex; dorsal margin of sacculus more rounded distally; aedeagus with cornuti spinules much weaker.

FEMALE (fig. 169).—Alar expanse 16–20 mm. Similar to male in color and maculation. Genitalia (fig. 100) similar to those of *brasiliensis* but with sclerotization at origin of ductus seminalis greatly reduced.

TYPE.—Male, U.S. National Museum, USNM 67622, genitalia slide HWC 8029.

TYPE-LOCALITY.—Piura, Peru.

PARATYPES.—From type-locality, 2 ♀, genitalia slide HWC 8030, in U.S. National Museum.

FOOD PLANT.—Unknown.

IN FLIGHT.—February.

***Loxostege protealis* (Warren), new combination**

FIGURES 56, 97, 162

Tritaea protealis Warren, 1892, Ann. Mag. Nat. Hist., ser. 6, vol. 9, p. 178.
Phlyctaenodes protealis (Warren).—Hampson, 1899, Proc. Zool. Soc. London, p. 211.

MALE.—Alar expanse 21 mm. Frons conical. Midtibia not incrassate; hair-pencil absent. Outer spur about one-half as long as inner spur. Resembles *eneanalis* in color and maculation but upper surface of forewing somewhat duller; area in cell between discal dot and reniform ochreous; terminal dots black, conspicuous; hindwing with postmedial line diffuse but evident.

Genitalia (fig. 56): Similar to those of the species described as *Pyrausta eneanalis* Schaus and treated next, but distinguished from them by the stronger ampulla, longer spine from dorsal margin of sacculus, and character of the cornuti of the aedeagus.

FEMALE (fig. 162).—Alar expanse 20–21 mm. Similar to male in color and maculation but with ochreous patch between discal dot and reniform stronger. Genitalia (fig. 97) similar to those of *eneanalis* but distinguished from them by difference in character of sclerotization adjacent to ostium, in length of ductus bursae from ostium to origin of ductus seminalis, and degree of sclerotization at origin of ductus seminalis.

LECTOTYPE.—Male, British Museum (Nat. Hist.).

TYPE-LOCALITY.—San Lorenzo Is., Callao, Peru.

FOOD PLANT.—Unknown.

DISTRIBUTION.—PERU: Trujillo and Angasmarca.

SPECIMENS EXAMINED.—3.

IN FLIGHT.—No dates of collection on labels.

REMARKS.—The species was based on two males and one female, all from the same locality. The male, with genitalia dissected, is hereby designated lectotype of *protealis*.

***Loxostege eneanalis* (Schaus), new combination**

FIGURES 53, 101, 160, 161

Pyrausta eneanalis Schaus, 1923, Zoologica, Sci. Contr. New York Zool. Soc., vol. 5, p. 45.

MALE (fig. 160).—Alar expanse 18 mm. Frons conical. Antenna pubescent. Midtibia slightly thicker than hind tibia; hair-pencil obsolescent or absent. Outer spur about one-half as long as inner spur. Resembles darker specimens of *occidentalis* in color and maculation.

Genitalia (fig. 53): Similar to those of *occidentalis*, harpe with a single spine arising from dorsal margin of sacculus; an obscure ampulla dorsad of cluster of long, slender setae; spinelike cornuti of aedeagus stronger.

FEMALE (fig. 161).—Alar expanse 17–20 mm. Similar to male in color and maculation. Genitalia (fig. 101): the conspicuous dilation of ductus seminalis in combination with character of sclerotization adjacent to ostium, ductus bursae between ostium and origin of ductus seminalis, and ductus seminalis at origin, are diagnostic for females.

TYPE.—Male, U.S. National Museum, USNM 26524, genitalia slide HWC 17,693.

TYPE-LOCALITY.—Conway Bay, Indefatigable Island, Galapagos Archipelago.

FOOD PLANT.—Unknown.

DISTRIBUTION.—Indefatigable and South Seymour Islands, Galapagos Archipelago.

SPECIMENS EXAMINED.—4.

IN FLIGHT.—April.

REMARKS.—Examination of the type revealed that it is a male, not a female as stated by Schaus.

Ostrinia obliteralis (Walker), new combination

FIGURE 146

Botys obliteralis Walker, 1865, List of the lepidopterous insects in the British Museum (Nat. Hist.), pt. 34, p. 1392.

Loxostege obliteralis (Walker).—Barnes and McDunnough, 1917, Checklist of the Lepidoptera of boreal America, p. 131.

Pyrausta ainsliei Heinrich, 1919, Journ. Agric. Res., vol. 18, p. 175. [New synonymy.]

TYPES.—British Museum (Nat. Hist.): *obliteralis*, female; U.S. National Museum: *ainsliei*, male, USNM 22544.

TYPE-LOCALITIES.—North America: *obliteralis;* Knoxville, Tennessee: *ainsliei*.

REMARKS.—F. H. Benjamin was the first to note discrepancies in the sex of the type of *obliteralis* and the application of the name. In his unpublished notes, compiled about forty years ago during his examination of types of American species in the British Museum, he noted that the type of *obliteralis* was a female and not a male (as stated in the original description), and that the species to which the name was applied in collections in the United States was probably a *Pyrausta* instead of a *Loxostege*.

It was not until recently, however, that Walker's *obliteralis* was definitely determined to be conspecific with *ainsliei* by the comparison of females and genitalia of that species with the type of *obliteralis*.

Hence, *ainsliei* falls as a synonym of *obliteralis*. I am indebted to Mr. Whalley of the British Museum and to Dr. Duckworth of the U.S. National Museum for comparison of the material and verification of the suspected synonymy.

Ostrinia penitalis (Grote), new combination

Botis penitalis Grote, 1876, Canadian Ent., vol. 8, p. 98.
Pyrausta penitalis (Grote).—Fernald, 1903, *in* Dyar, U.S. Nat. Mus. Bull 52, p. 391.

Marion's (1957) paper transferring *nubilalis* (Hübner), commonly referred to as the European corn borer, from the genus *Pyrausta* Schrank to *Ostrinia* Hübner was restricted to species occurring in Europe. Because of that fact, treatment of its contemporary American congeners, *Pyrausta ainsliei* and *Pyrausta penitalis* (Grote), was omitted. *P. ainsliei* is placed in synonymy under *obliteralis* herein, but *penitalis* is not a *Loxostege* or *Phlyctaenodes* species and has never been assigned to either of them; in a strict sense it is not an essential part of this study. Due to its association with *ainsliei* and *nubilalis*, however, there is considerable economic literature involved. *P. penitalis* is also hereby assigned to *Ostrinia* for its correct placement and uniformity of nomenclature in references to *obliteralis*, *ainsliei*, and *penitalis*.

Phlyctaenodes parvipicta (Barnes and McDunnough), new combination

FIGURE 170

Loxostege parvipicta Barnes and McDunnough, 1918, Contr. Nat. Hist. Lepid. North America, vol. 4, p. 161.—McDunnough, 1939, Southern California Acad. Sci. Mem., vol. 2, no. 1, p. 13.

MALE (fig. 170).—Alar expanse 13 mm. Frons conical. Antenna ciliate, cilia longer than width of shaft. Midtibia not incrassate; hair-pencil absent. Upper surface of forewing ochreous, markings pinkish. Hindwing white, without markings.

Genitalia like those of *pustulalis* but with uncus and vinculum narrower, gnathos stouter, and aedeagus longer and more slender.

FEMALE.—Alar expanse 14 mm. Similar to male in color and maculation. Genitalia like those of *pustulalis* but with anterior and posterior apophyses shorter and collarlike structure of ductus bursae more strongly sclerotized.

LECTOTYPE.—Male, U.S. National Museum, USNM 67627, genitalia slide HWC 7815.

TYPE-LOCALITY.—Olancha, Inyo Co., Calif.

FOOD PLANT.—Unknown.

DISTRIBUTION.—Arizona: Mojave Co. California: type-locality. Nevada: Clarke Co.

SPECIMENS EXAMINED.—17.

IN FLIGHT.—March to June.

REMARKS.—Of the American species studied, only *parvipicta* has the characters of *Phlyctaenodes*, to which it is hereby transferred; it is not closely related to the *vibicalis* group as indicated in the original description.

The species was based on three males and two females. Two of the specimens were labeled as type male and type female and the remainder paratypes. The specimen labeled "*Loxostege parvipicta* B. & McD., male type" is hereby designated lectotype of the species.

References

GUENÉE, M. A.

1864. Deltoides et Pyralites. Vol 8 *in* Boisduval and Guenée, Histoire naturelle des insectes: Species général des lépidoptères, pp. 173, 405.

HAMPSON, G. F.

1899. A revision of moths of the subfamily Pyraustinae and Pyralidae. Proc. Zool. Soc. London, pp. 207–212.

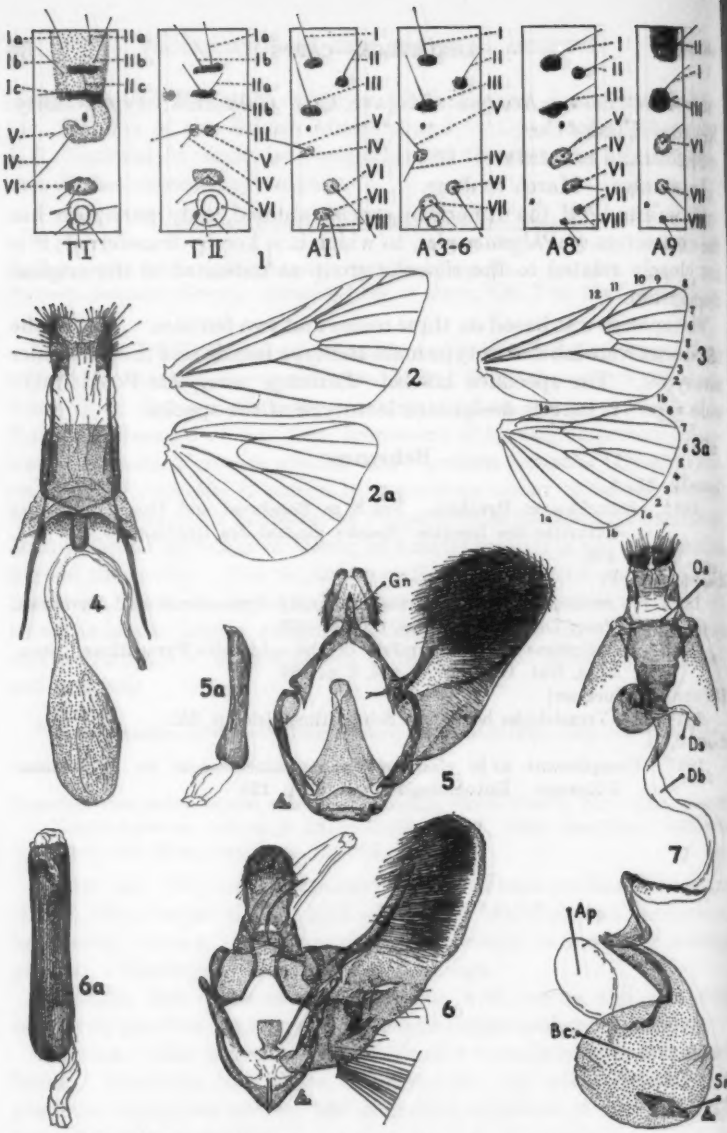
1918. Descriptions of new pyralide of the subfamily Pyraustinae. Ann. Mag. Nat. Hist., ser. 9, vol. 2, p. 189.

HÜBNER, J. [Huebner]

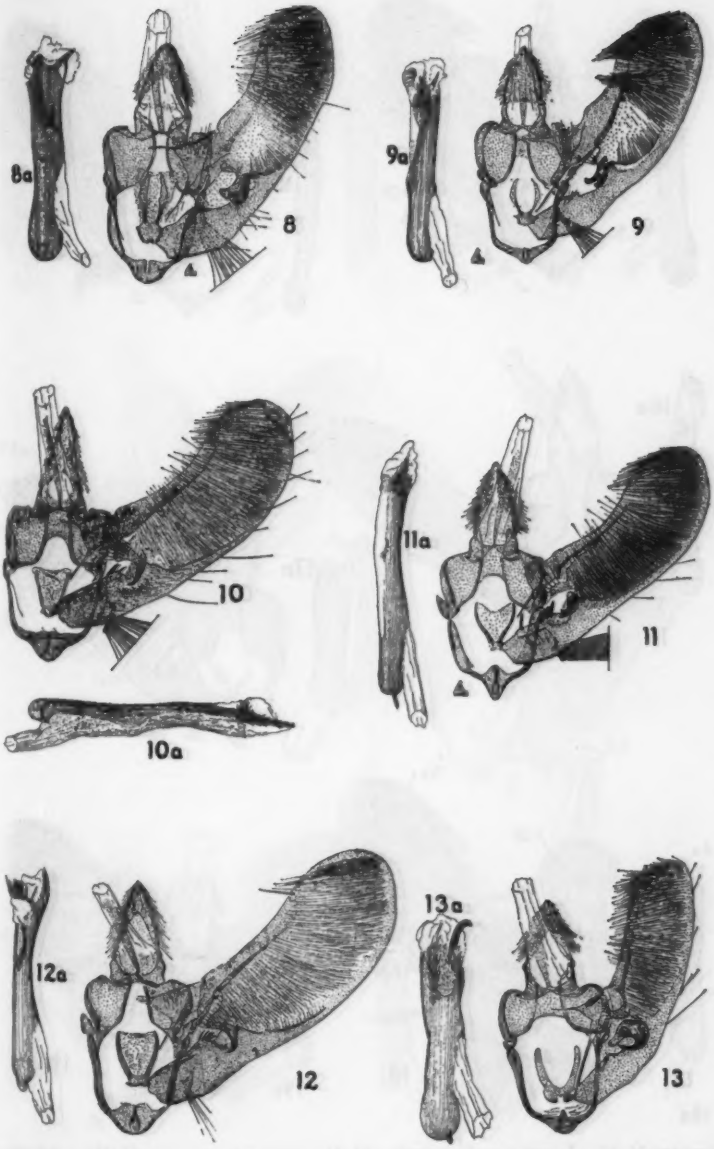
1816–27. Verzeichniss bekannter Schmettlinge [sic], p. 352.

MARION, H.

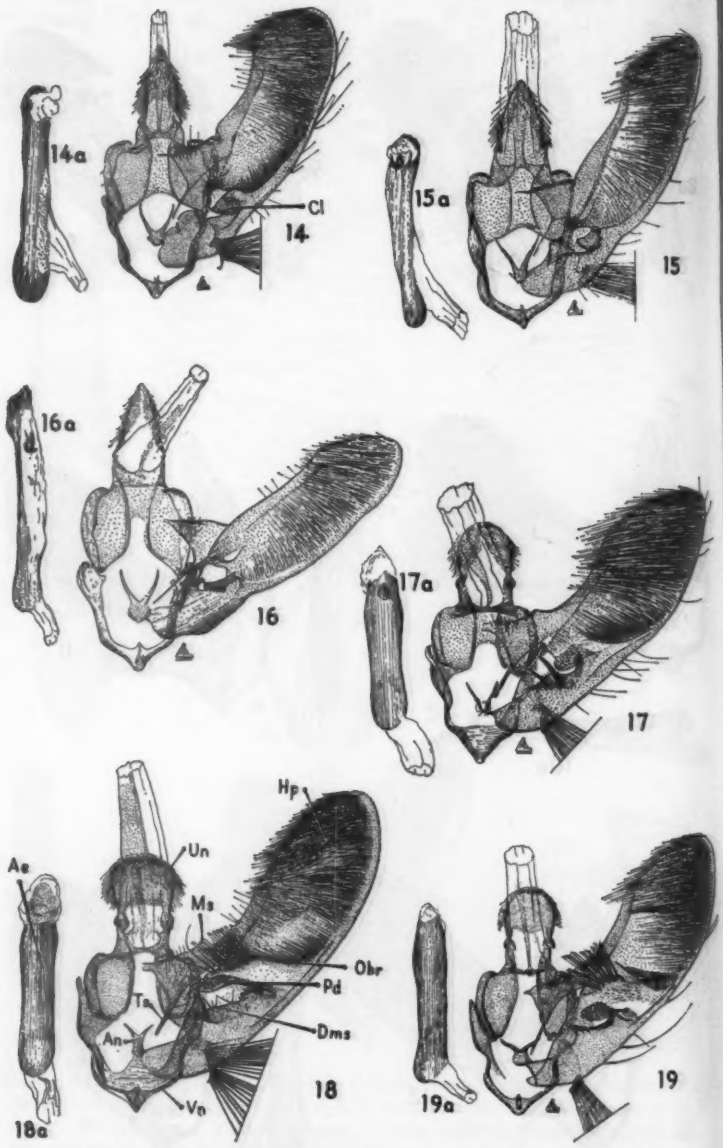
1957. Complément à la classification et nomenclature de Pyraustinae d'Europe. Entomologiste, vol. 13, p. 129.



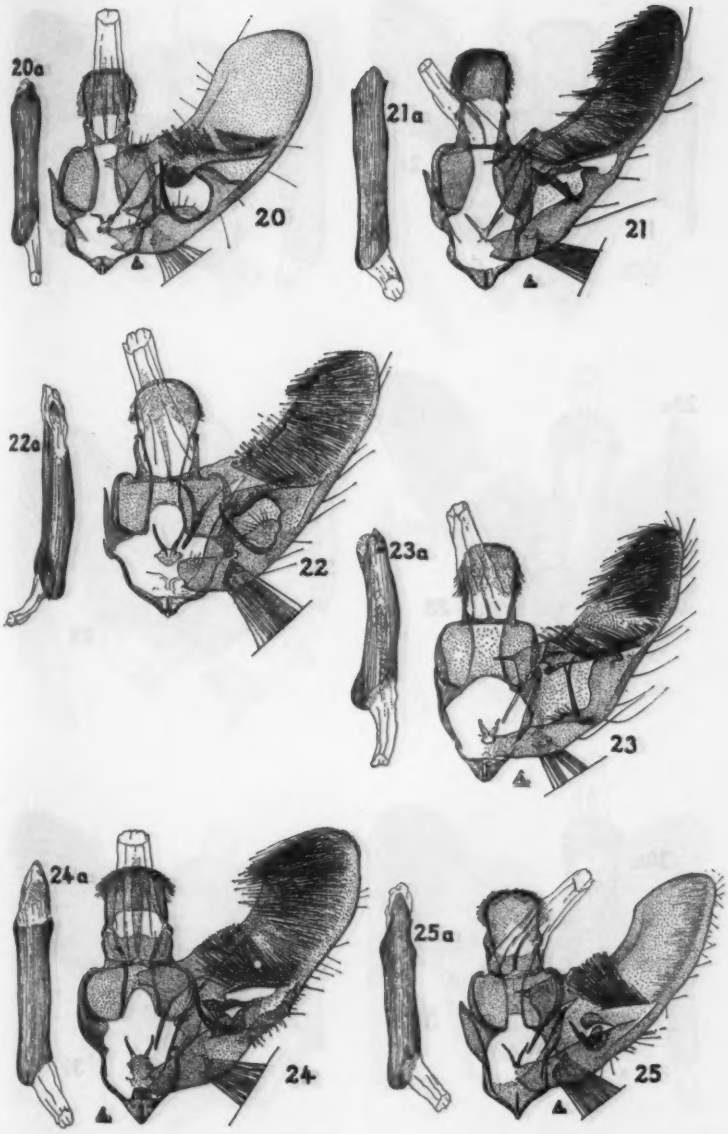
FIGURES 1–7.—*Loxostege rantalis* (Guenée): 1, larval setal arrangement of prothorax, mesothorax, and abdominal segments 1, 3–6, 8, 9, using Dyar and Heinrich system of terminology (TI=prothorax, TII=mesothorax, A1=1st abdominal segment, A3–6=3rd to 6th abdominal segments, A8=8th abdominal segment, A9=9th abdominal segment). *Loxostege aeruginalis* (Hübner): 2, forewing; 2a, hindwing. *Phlyctaenodes pustulalis* (Hübner): 3, forewing; 3a, hindwing; 4, female genitalia; 5, male genitalia; 5a, aedeagus. *Loxostege aeruginalis* (Hübner): 6, male genitalia; 6a, aedeagus; 7, female genitalia (Ap=accessory pouch, Bc=bursa copulatrix, Db=ductus bursae, Ds=ductus seminalis, Os=ostium, Sn=signum).



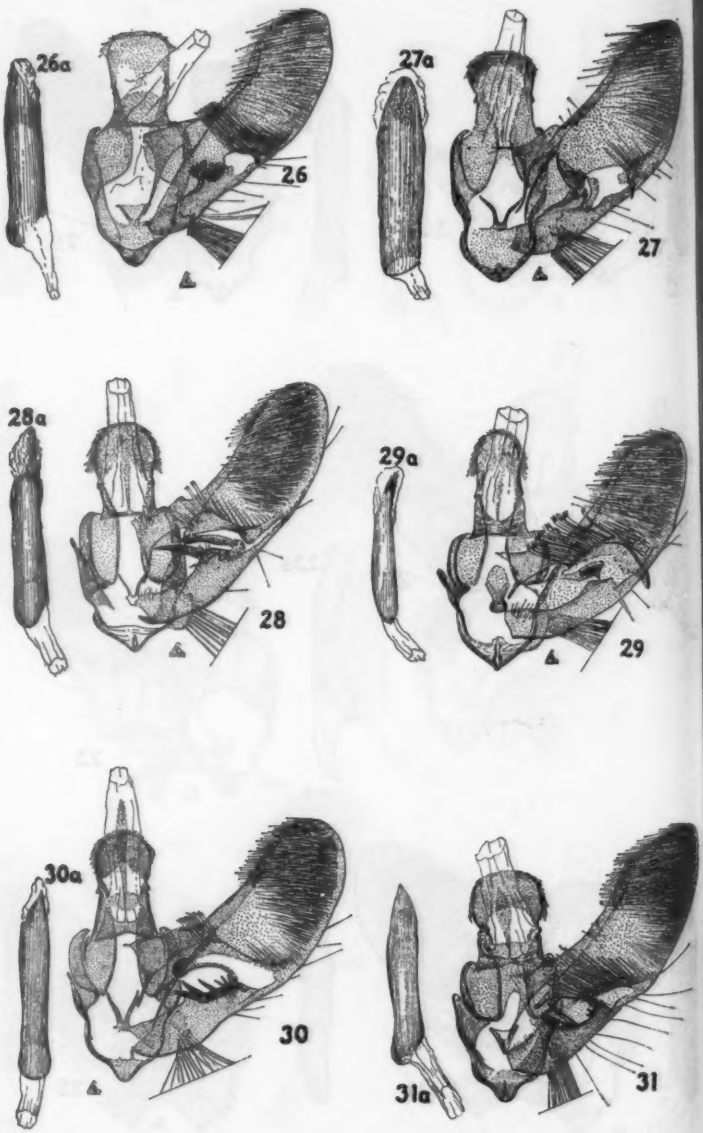
FIGURES 8–13.—*Loxostege*, male genitalia: 8, 8a, *helvialis* (Walker); 9, 9a, *pseudohelvialis*, new species; 10, 10a, *nayaritensis*, new species; 11, 11a, *arizonensis*, new species; 12, 12a, *neohelvialis*, new species; 13, 13a, *sinaloensis*, new species.



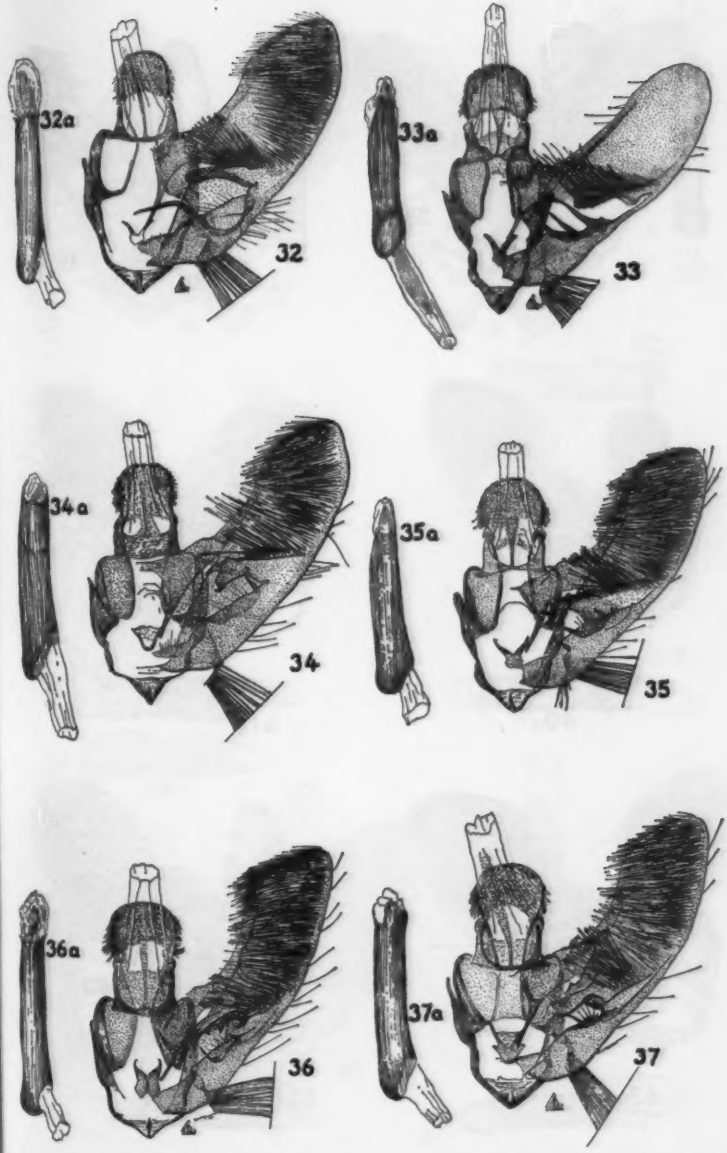
FIGURES 14–19.—*Loxostege*, male genitalia: 14, 14a, *polingi*, new species; 15, 15a, *pelotasalis*, new species; 16, 16a, *boliviensis*, new species; 17, 17a, *coloradensis* (Grote and Robinson); 18, 18a, *fordi*, new species; 19, 19a, *alpinensis*, new species. (Ae=aedeagus, An=anellus, Cl=clasper, Dms=dorsal margin of sacculus, Gn=gnathos, Hp=harpe, Ms=modified setae, Obr=oblique ridge, Pd=pad, Ts=transtilla, Un=uncus, Vn=vinculum.)



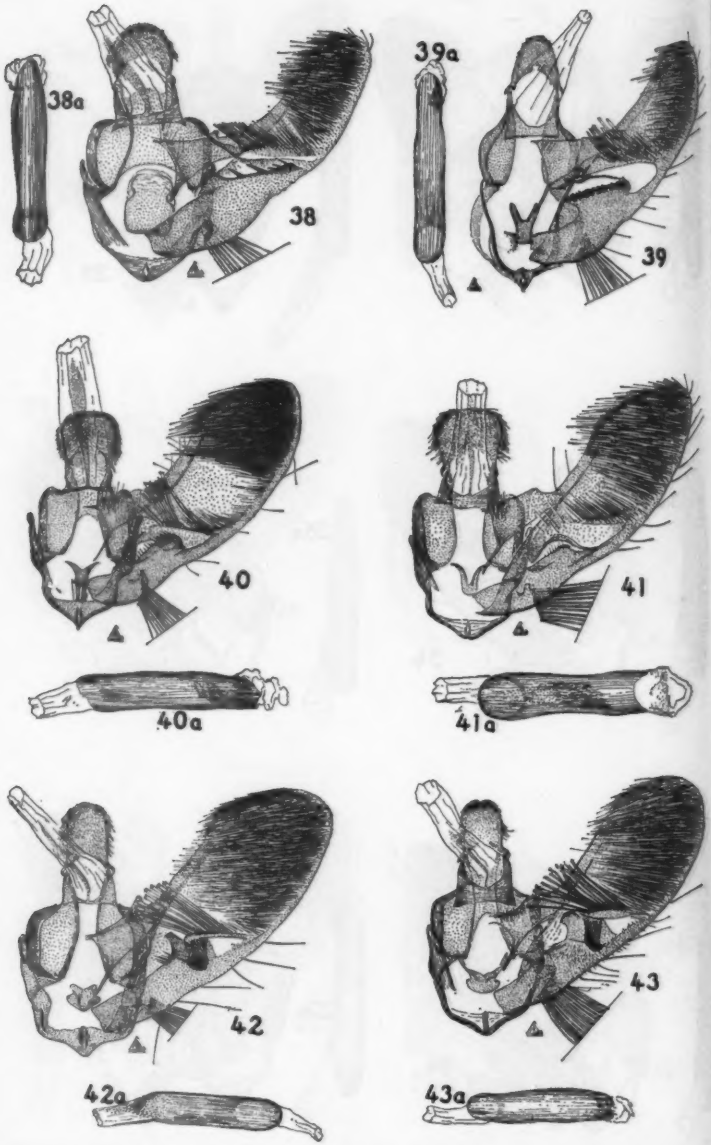
FIGURES 20–25.—*Loxostege*, male genitalia: 20, 20a, *marculenta* (Grote and Robinson); 21, 21a, *neomarculenta*, new species; 22, 22a, *potosiensis*, new species; 23, 23a, *conisphora* (Hampson); 24, 24a, *neotropicalis*, new species; 25, 25a, *pseudobliteralis*, new species.



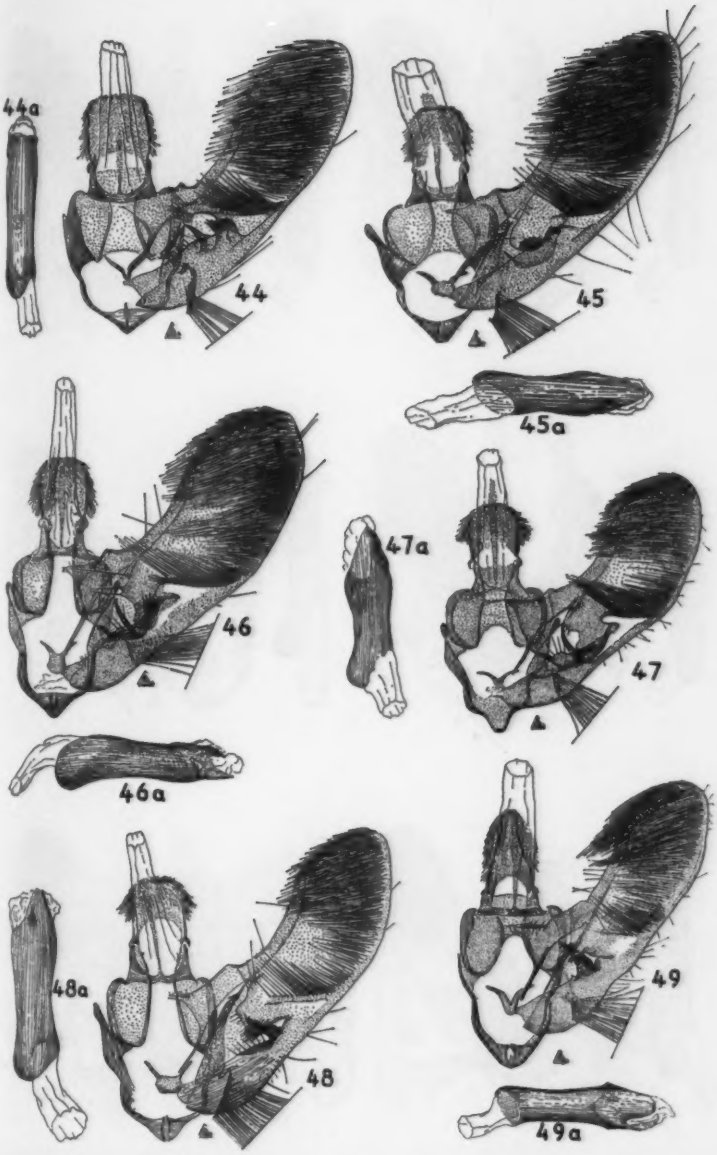
FIGURES 26–31.—*Loxostege*, male genitalia: 26, 26a, *neobliteralis*, new species; 27, 27a, *mancalis* (Lederer); 28, 28a, *ramsdenalis* (Schaus); 29, 29a, *entephrialis* (Schaus); 30, 30a, *pergilvalis* (Hulst); 31, 31a, *sacculalis* Amsel.



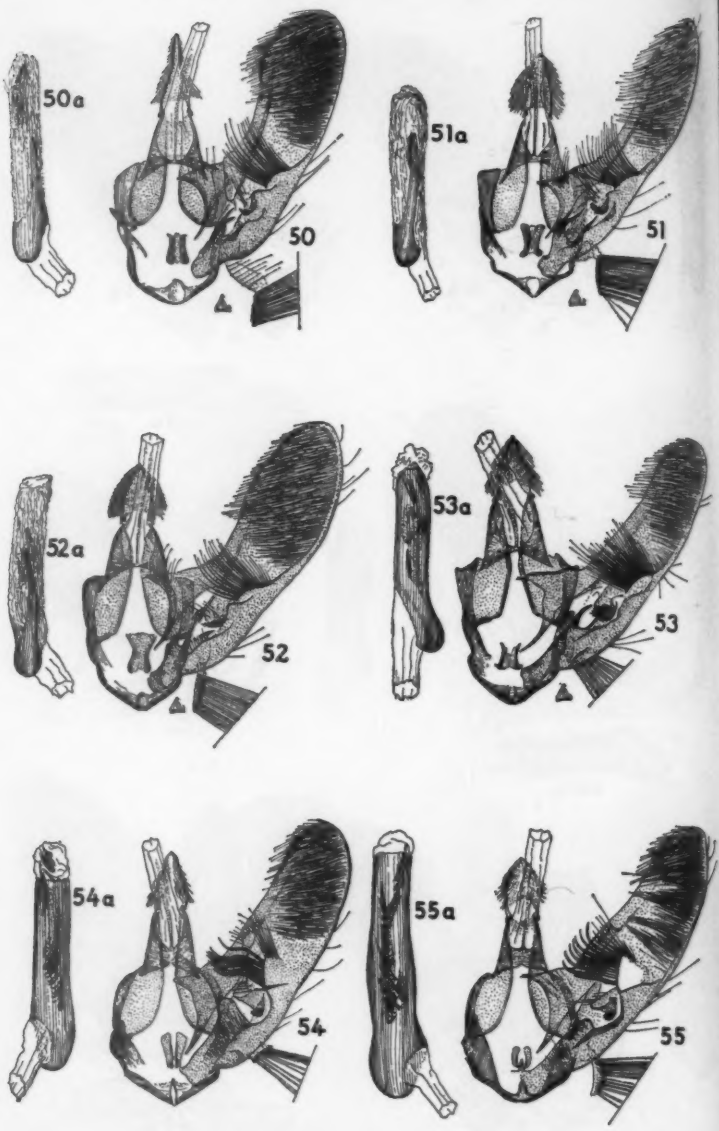
FIGURES 32–37.—*Loxostege*, male genitalia: 32, 32a, *nigripes* (Schaus); 33, 33a, *jaralis* (Schaus); 34, 34a, *chiapasalis*, new species; 35, 35a, *cayugalis*, new species; 36, 36a, *cynoalis* (Druce); 37, 37a, *ecuadoralis*, new species.



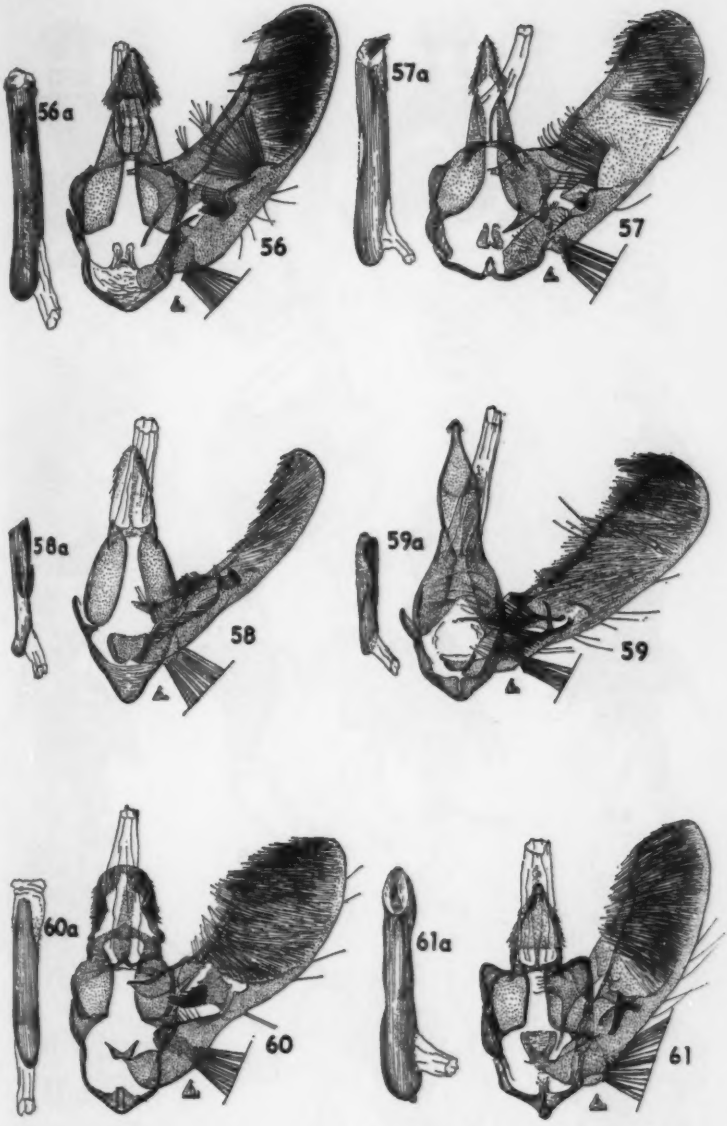
FIGURES 38–43.—*Loxostege*, male genitalia: 38, 38a, *jacalensis*, new species; 39, 39a, *cochinsis*, new species; 40, 40a, *corozalis*, new species; 41, 41a, *autocratoralis* (Dyar); 42, 42a, *mellinialis* (Druce); 43, 43a, *venadialis*, new species.



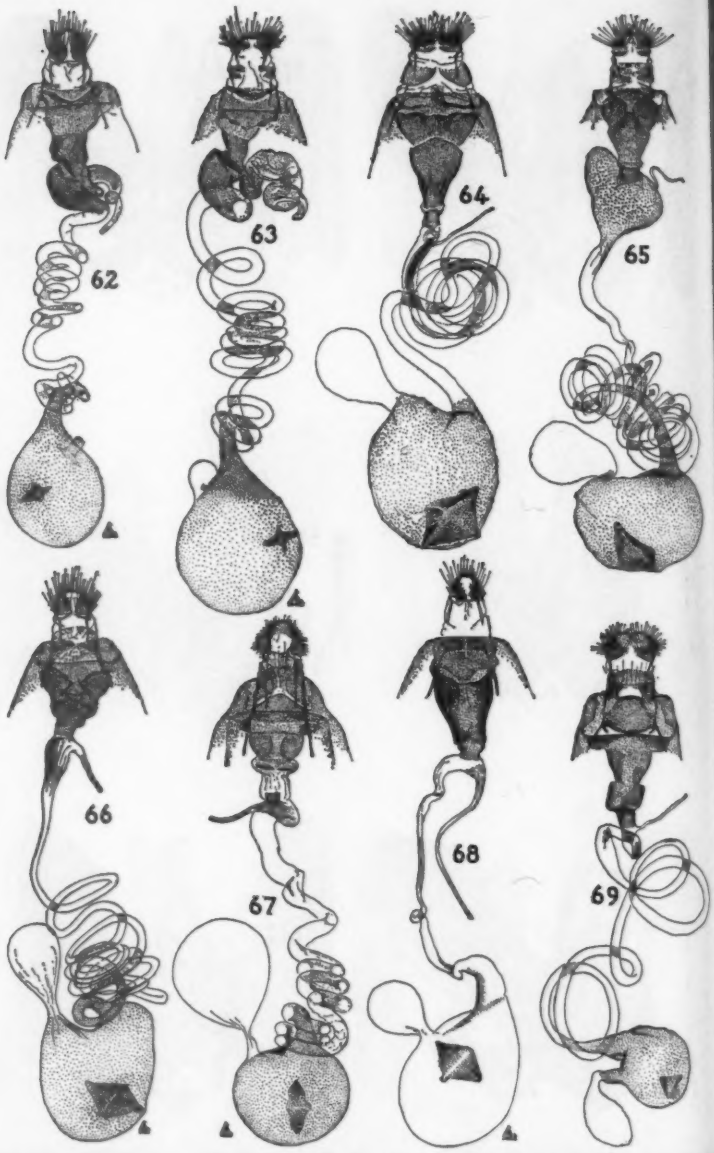
FIGURES 44–49.—*Loxostege*, male genitalia: 44, 44a, *conisphoralis*, new species; 45, 45a, *purulhalis*, new species; 46, 46a, *huachucalis*, new species; 47, 47a, *marialis*, new species; 48, 48a, *yucatanalis*, new species; 49, 49a, *volcanensis*, new species.



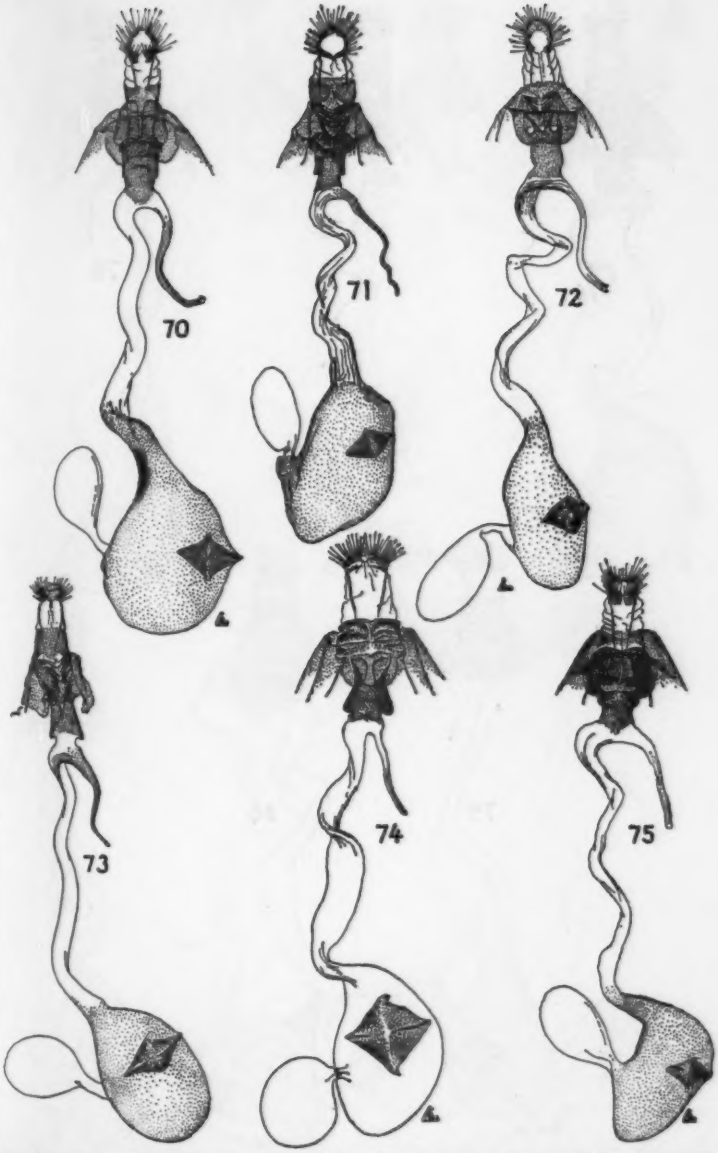
FIGURES 50–55.—*Loxostege*, Male genitalia: 50, 50a, *similalis* (Guenée); 51, 51a, *rantalis* (Guenée); 52, 52a, *occidentalis* (Packard); 53, 53a, *eneanalis* (Schaus); 54, 54a, *bifidalis* (Fabricius); 55, 55a, *brasiliensis*, new species.



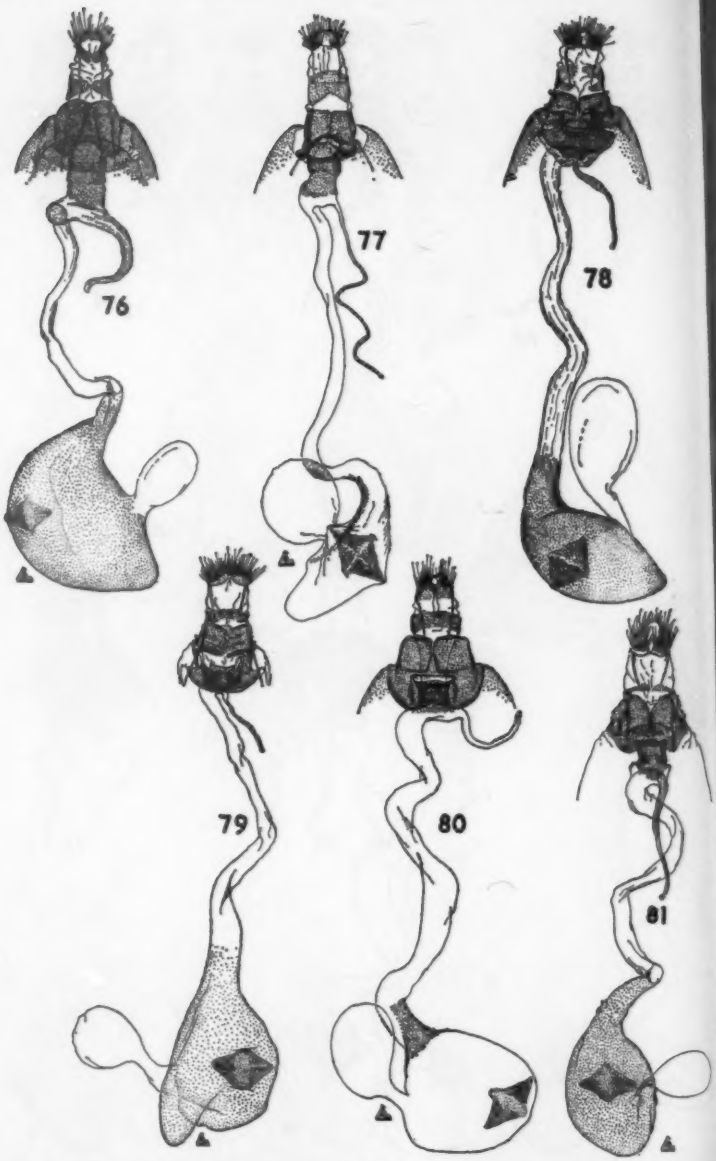
FIGURES 56–61.—*Loxostege*, male genitalia: 56, 56a, *protealis* (Warren); 57, 57a, *piuralis*, new species; 58, 58a, *labeculalis* (Hulst); 59, 59a, *federalis*, new species; 60, 60a, *cupreicostalis* (Dyar); 61, 61a, *subcuprea* (Dognin).



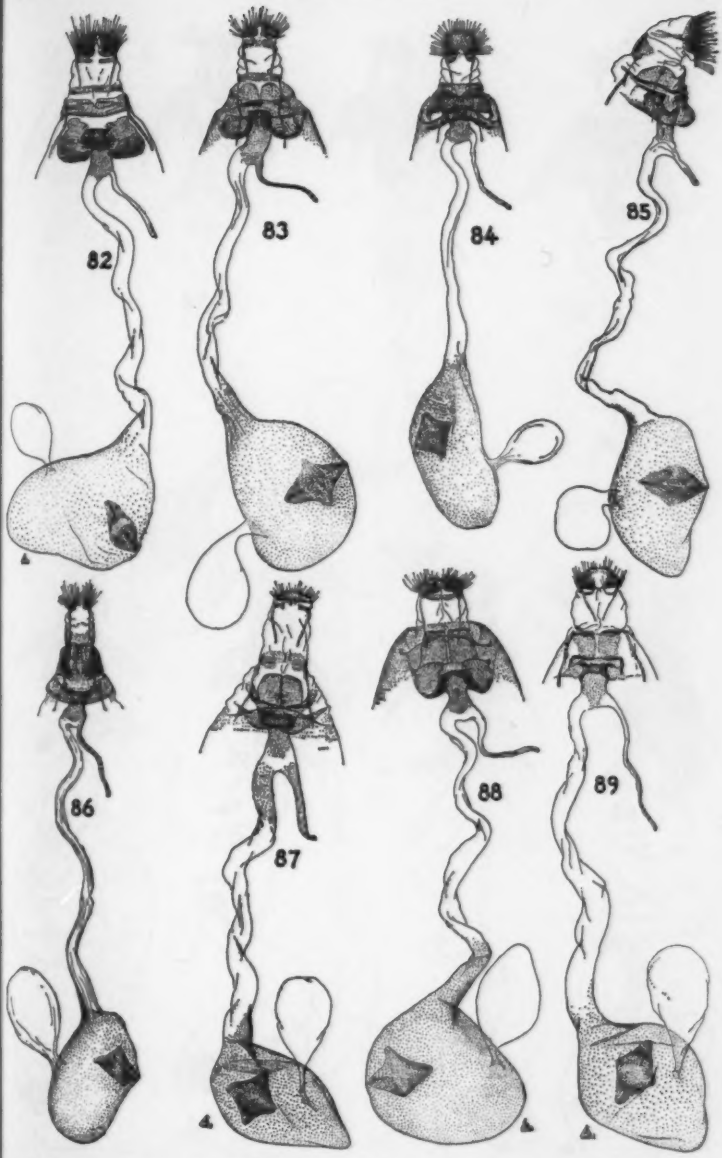
FIGURES 62-69.—*Loxostege*, female genitalia: 62, *helvialis* (Walker); 63, *pseudohelvialis*, new species; 64, *arizonensis*, new species; 65, *nayaritensis*, new species; 66, *neohelvialis*, new species; 67, *polingi*, new species; 68, *nigripes* (Schaus); 69, *saltensis*, new species.



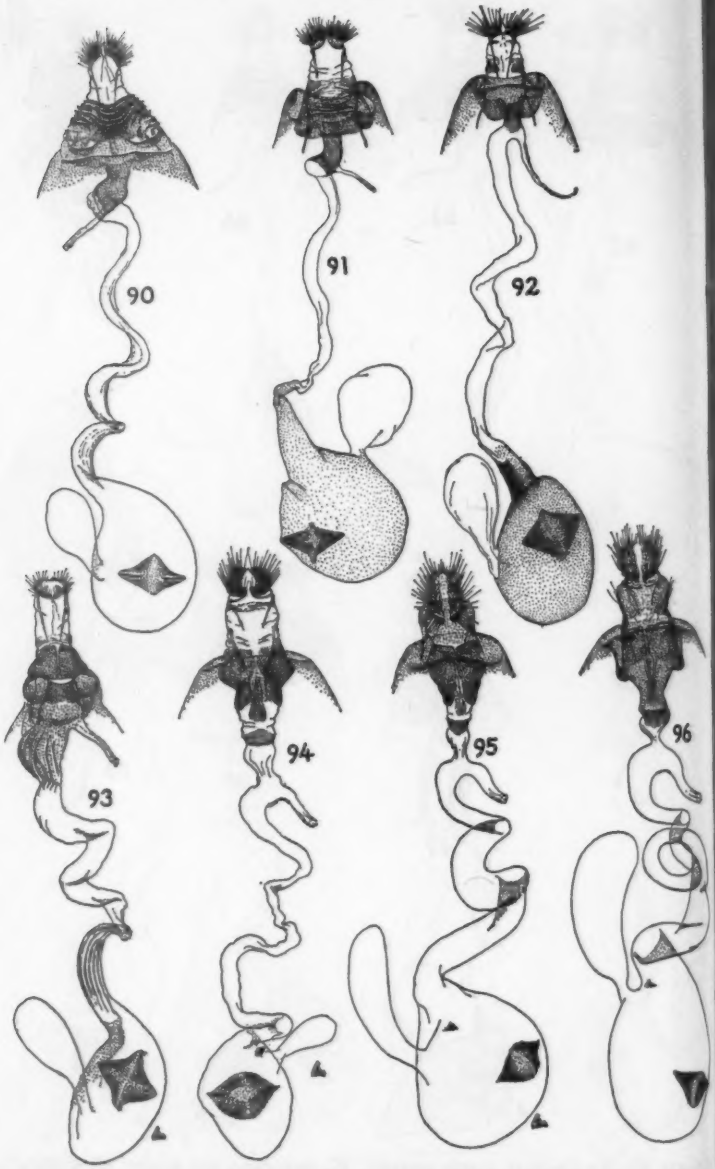
FIGURES 70–75.—*Loxostege*, female genitalia: 70, *marculenta* (Grote & Robinson); 71, *neomarculenta*, new species; 72, *cynoalis* (Druce); 73, *conisphora* (Hampson) 74, *ramsdenalis* (Schaus); 75 *huachucalis*, new species.



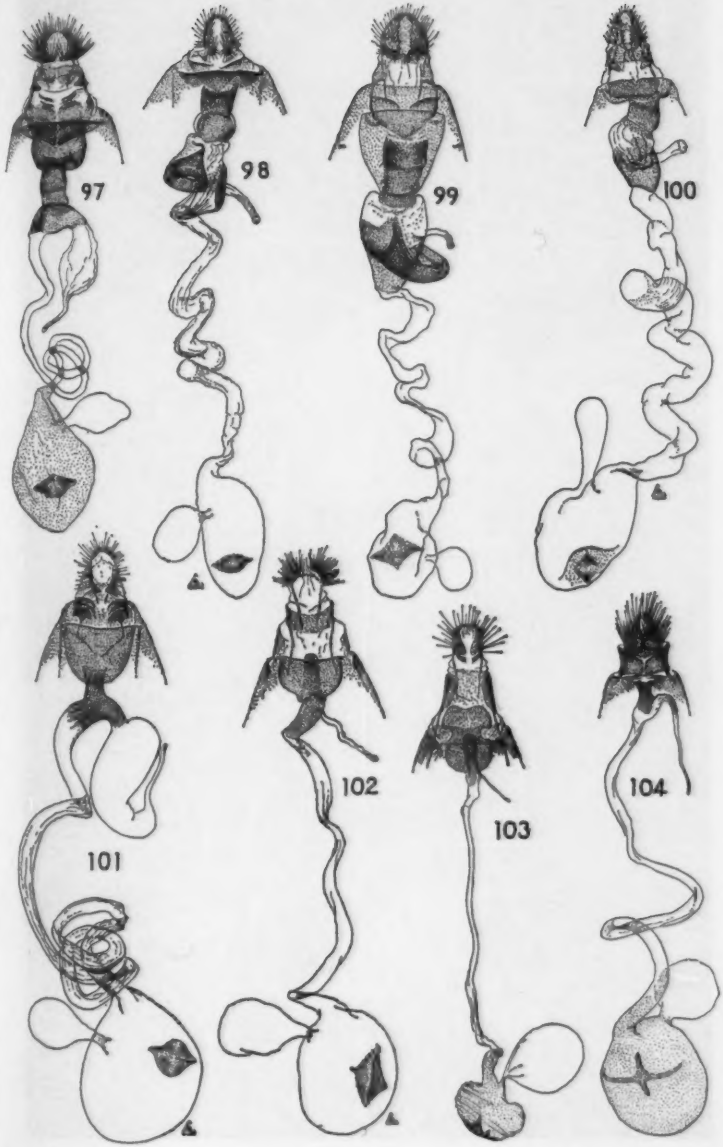
FIGURES 76–81.—*Loxostege*, female genitalia: 76, *marialis*, new species; 77, *coloradensis* (Grote & Robinson); 78, *jaralis* (Schaus); 79, *pergivalis* (Hulst); 80, *conisphoralis*, new species; 81, *volcanensis*, new species.



FIGURES 82–89.—*Loxostege*, female genitalia: 82, *cochisensis*, new species; 83, *alpinensis*, new species; 84, *fordi*, new species; 85, *cayugalis*, new species; 86, *neotropicalis*, new species; 87, *neobliteralis*, new species; 88, *pseudobliteralis*, new species; 89, *mancalis* (Lederer).



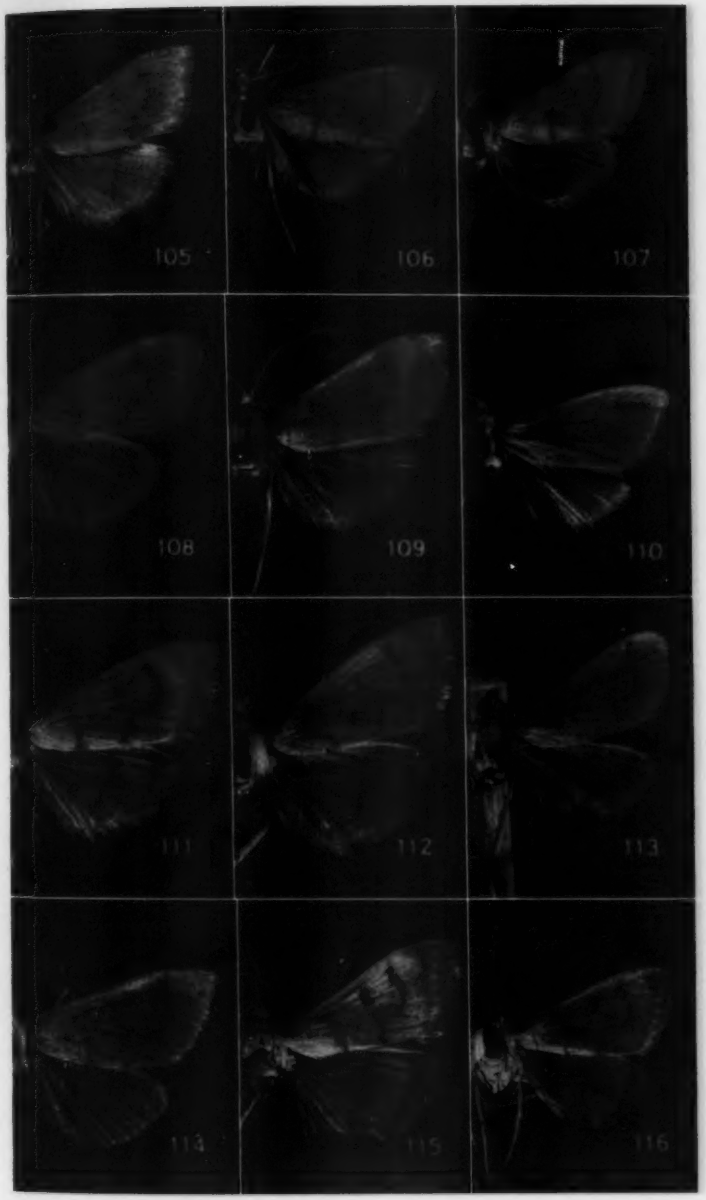
FIGURES 90–96.—*Loxostege*, female genitalia: 90, *venadialis*, new species; 91, *mellinialis* (Druce); 92, *corozalis*, new species; 93, *autocratoralis* (Dyar); 94, *rantalis* (Guenée); 95, *similalis* (Guenée); 96, *occidentalis* (Packard).



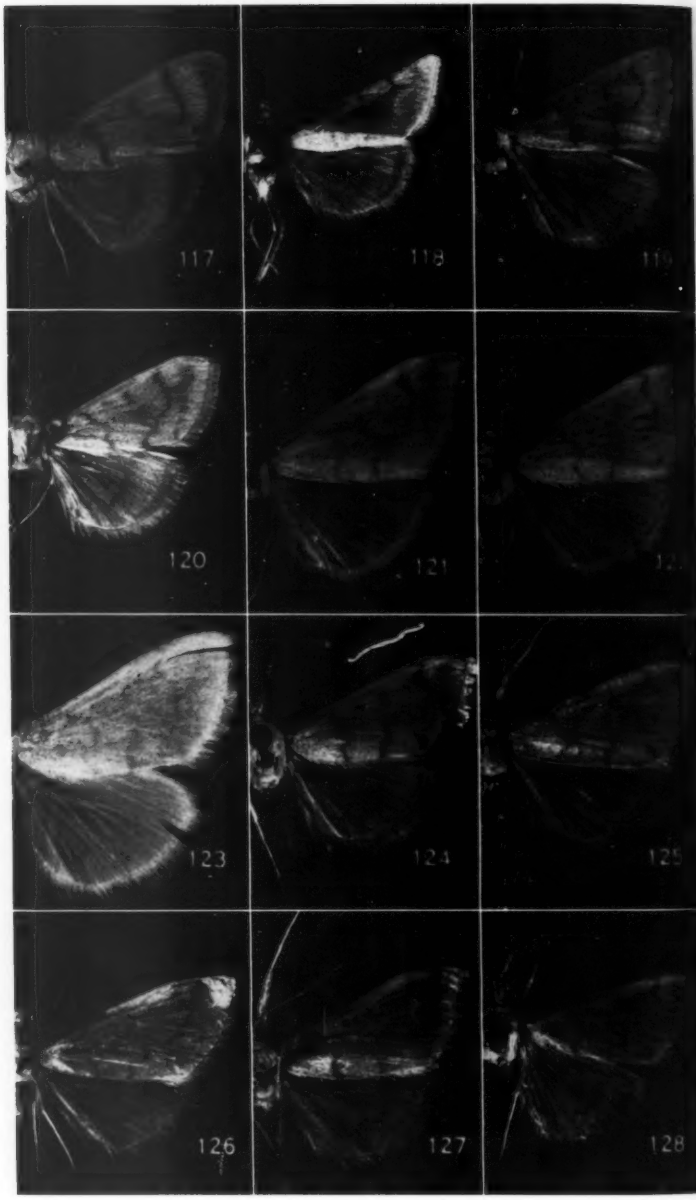
FIGURES 97–104.—*Loxostege*, female genitalia: 97, *prodealis* (Warren); 98, *bifidalis* (Fabricius;) 99, *brasiliensis*, new species; 100, *piuralis*, new species; 101, *eneanalis* (Schaus); 102, *labeculalis* (Hulst); 103, *federalis*, new species; 104, *cupreicostalis* (Dyar).

Plates

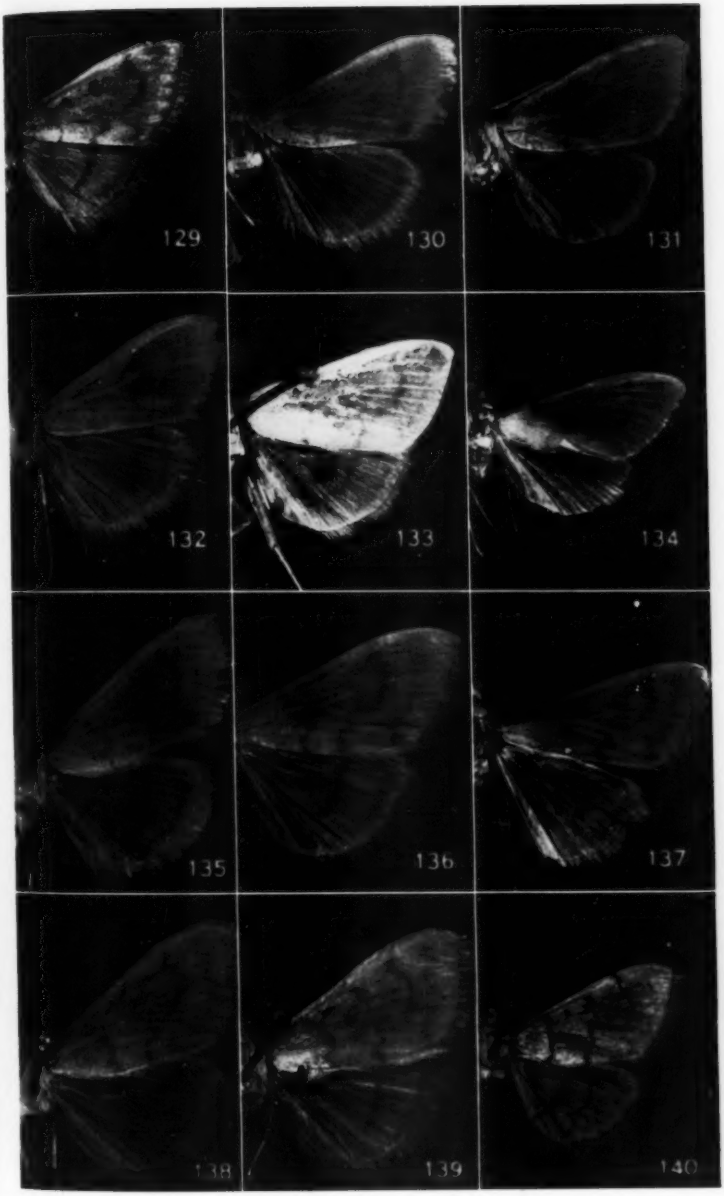
(Figures 105–178)



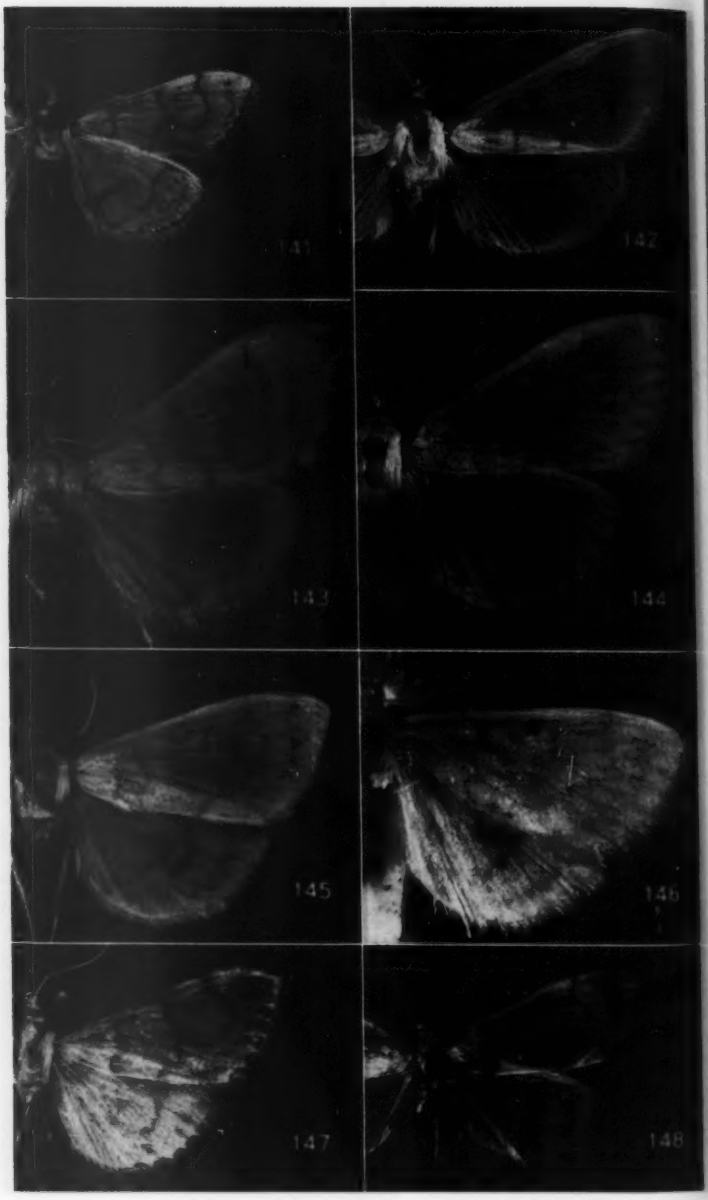
FIGURES 105–116.—*Loxostege*, right wings: 105, *helvialis* (Walker), ♀; 106, *pseudohelvialis*, new species, ♂ paratype; 107, *fordi*, new species, ♂ paratype; 108, *alpinensis*, new species, ♂ type; 109, *polingi*, new species, ♂ type; 110, *boliviensis*, new species, ♂ type; 111, *neohelvialis*, new species, ♂ paratype; 112, *arizonensis*, new species, ♂ paratype; 113, *pelotasalis*, new species, ♂ type; 114, *saltensis*, new species, ♀ type; 115, *autocratoralis* (Dyar), ♀ type; 116, *corozalis*, new species, ♂ type.



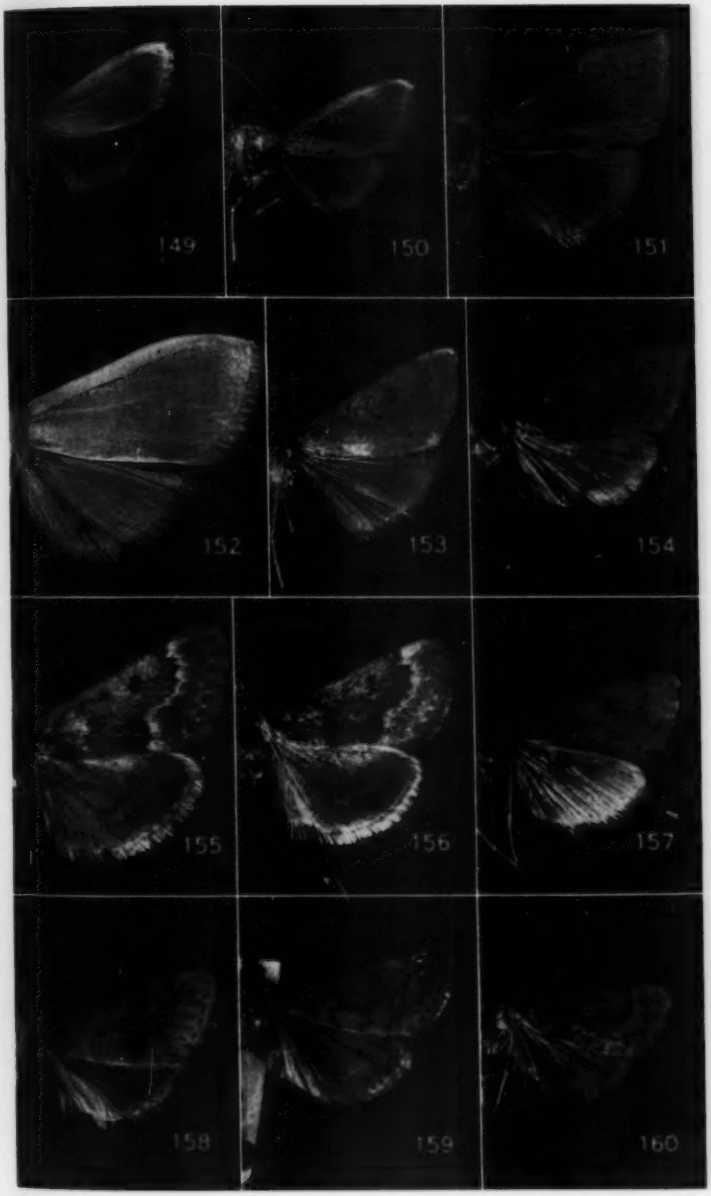
FIGURES 117–128.—*Loxostege*, right wings: 117, *nayaritensis*, new species, ♀ paratype; 118, *sacculalis* Amsel, ♂; 119, *mancalis* (Lederer), ♂ lectotype; 120, *ramsdenalis* (Schaus), ♀ type; 121, *cochisensis*, new species, ♀ paratype; 122, *pergilvalis* (Hulst), ♂; 123, *coloradensis* (Grote and Robinson), ♀; 124, *huachucalis*, new species, ♂ type; 125, *marialis*, new species, ♂ type; 126, *purulhalis*, new species, ♂ type; 127, *conisphoralis*, new species, ♂ paratype; 128, *conisphora* (Hampson), ♂ paralectotype.



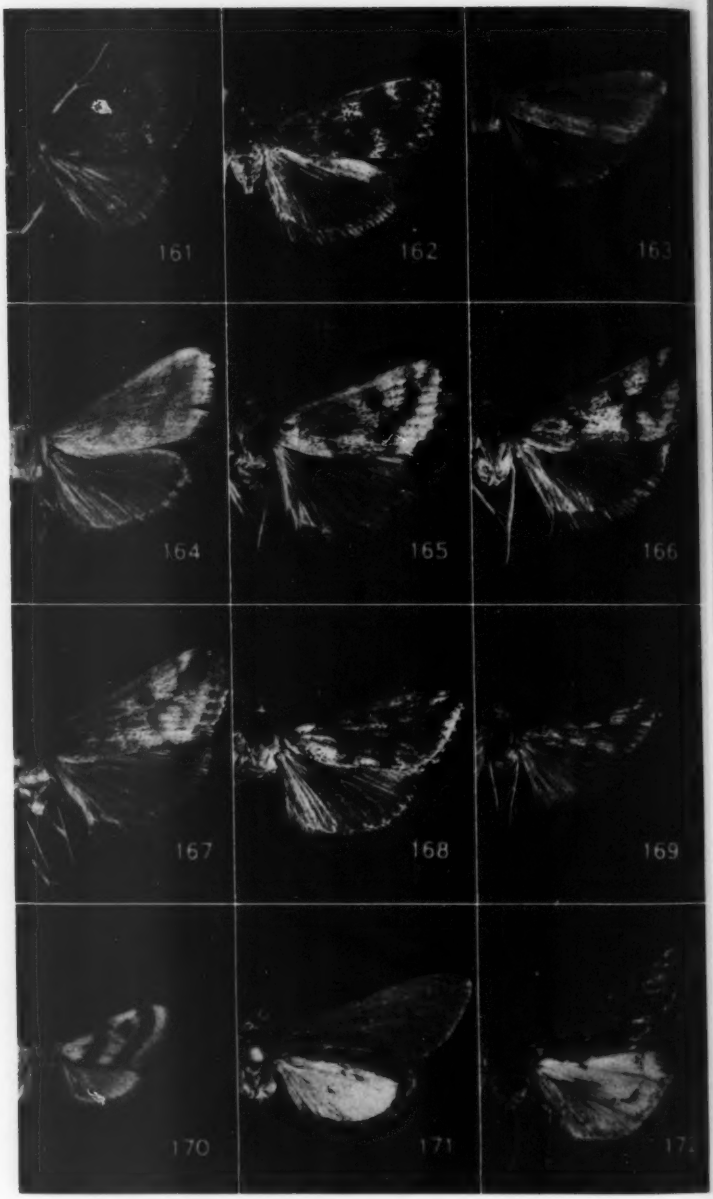
FIGURES 129–140.– *Loxostege*, right wings: 129, *volcanensis*, new species, ♂ type; 130, *marculenta* (Grote and Robinson), ♂; 131, *neomarculenta*, new species, ♀ paratype; 132, *neobliteralis*, new species, ♂ paratype; 133, *neotropicalis*, new species, ♂ type; 134, *jacalensis*, new species, ♂ type; 135, *pseudobliteralis*, new species, ♂ paratype; 136, *cayugalis*, new species, ♀ paratype; 137, *cynoalis* (Druce), ♂ lectotype; 138, *ecuadoralis*, new species, ♂ type; 139, *jaralis* (Schaus), ♀ type; 140, *labeculalis* (Hulst), ♀.



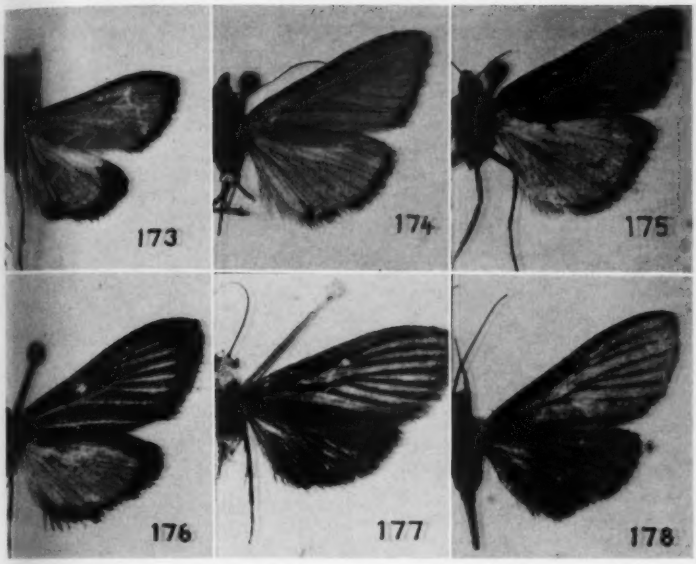
FIGURES 141–148.—*Loxostege* and *Ostrinia*, right wings: 141, *L. intinctalis* (Dyar), ♂ type; 142, *L. cupreicostalis* (Dyar), ♂ type; 143, *L. mellinialis* (Druce), ♀; 144, *L. phrixalis* (Dyar), ♀ type; 145, *L. venadialis*, new species, ♀ paratype; 146, *O. obliteralis* (Walker), ♀ type; 147, *L. entephrialis* (Schaus), ♂ type; 148, *L. federalis*, new species, ♂ type.



FIGURES 149–160.— *Loxostege*, right wings: 149, *subcostalis* (Dyar). ♂ type; 150, *sinaloensis*, new species, ♂ paratype; 151, *chiapasalis*, new species, ♂ type; 152, *nigripes* (Schaus), ♂ type; 153, *rantalis* (Guenée), ♂; 154, *rantalis* (Guenée), ♀ type; 155, *occidentalis* (Packard), ♂; 156, *occidentalis* (Packard), ♀; 157, *similalis* (Guenée), ♂ type; 158, *similalis* (Guenée), ♀; 159, *garalis* (Schaus), ♂ type; 160, *eneanalis* (Schaus), ♂ type.



FIGURES 161–172.—*Loxostege* and *Phlyctaenodes*, right wings: 161, *L. eneanalis* (Schaus), ♀; 162, *L. protealis* (Warren), ♀; 163, *L. stolidalis* (Schaus), ♂ type; 164, *L. bifidalis* (Fabricius), ♂; 165, *L. bifidalis* (Fabricius), ♀; 166, *L. brasiliensis*, new species, ♂ type; 167, *L. brasiliensis*, new species, ♀ paratype; 168, *L. piuralis*, new species, ♂ type; 169, *L. piuralis*, new species, ♀ paratype; 170, *P. parvipicta* (Barnes and McDunnough), ♂ lectotype; 171, *L. aemulalis* (Dognin), ♂ type; 172, *L. mojavealis*, new species, ♀ type.



FIGURES 173–178.—*Loxostege*, right wings: 173, *naranjalis* (Schaus), ♀ type; 174, *subcuprea* (Dognin), ♂ type; 175, *mojavealis*, new species, ♀ type; 176, *clarissalis* (Schaus), ♂ type; 177, *fuscivenalis* (Schaus) ♂ type; 178, *peruensis*, new species, ♂ type.

U S GOVERNMENT PRINTING OFFICE: 1987